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ABSTRACT

This document presents a framework for the study of individual demand for education. It also presents an analysis of research findings and applies these findings to recent educational trends and changes in Sweden. The first chapter provides data showing that the demand for higher education in industrialized countries has increased greatly during the past 20 years. Chapter two discusses the problems of predicting and planning for changing enrollments. In chapter three, a schema on the process of occupational choice is used to identify explanatory factors for educational decisions. An individual's decisions are in part seen as a compromise between his preferences for, and his expectancies of, a certain education. Research reviewed in chapter four reveals first that occupational motives strongly influence choice of education; and secondly, that a student's confidence in his own choice is dependent on his family background. Chapters five and six discuss the influence on educational choice of such factors as sex and intelligence. Chapters seven and eight discuss the influence of factors such as school admission rules and geographic availability. A case study of recent educational trends in Sweden is analyzed in chapter nine. The concluding chapter states that planning for adjustment and change of the educational system requires efficient feedback from the system and a better understanding of factors influencing individual demand. Bibliographic information is given. (Author/BC)

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INDIVIDUAL DEMAND FOR EDUCATION

ANALYTICAL REPORT

by

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U S DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

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PREFACE

This study has its origins in the continuing concern of the work programmes of the Education Committee of the OECD with the evolution of educational planning approaches and methodologies in response to the changing requirements of educational policy formation. It was conceived at a time when traditional approaches to educational planning, based on external factors such as manpower forecasts or more global social needs, had proved manifestly impracticable in the light of the observed fluctuations in the demand by school leavers for further education. It was therefore felt that a better understanding of the way in which the demand for education operates at the level of the individual and of the factors which influence this demand and its variations could be a useful supplementary guide to the future planning of educational provision.

In the present analytical report Professor Härnqvist presents a theoretical framework to the study of individual demand for education, supplemented by an analysis of empirical research findings in this area and an application of them to recent educational trends and changes in his own country, Sweden. Supplementary work has been carried out by the Secretariat in the form of an empirical analysis of the situation in four other countries - France, Germany, Greece and the United Kingdom - which will be published in an accompanying volume, together with a General Report summarising the main findings from all of this work.

The Secretariat wishes to acknowledge its indebtedness to Professor Härnqvist for the effort he put into the preparation of the present report as a Consultant to the OECD.

SUMMARY

As shown in Chapter I, the enrolment in post-compulsory education has increased rapidly during the last twenty years. In general, the rate of increase was higher in the 60s than before or after, and in some countries there was even an unexpected decrease in the first years of the 70s.

The problems in predicting and planning for these changes are the background of the present report on factors that influence individual demand for education (Chapter II). The report is part of an OECD project on Individual Demand for Education. Although individual demand is used here as a concept at the collective level, demand results from the aggregation of a great number of decisions at the individual level and factors influencing individual choices therefore take up a large part of the report.

A schema on the process of occupational choice by Blau et al. is used in Chapter III as a conceptual framework in the search for explanatory factors. The final decision by an individual is conceived as a compromise between his preferences for, and his expectancies of, a certain occupation, or here, education. These in turn are dependent on determinants in the individual's personality and life history as well as institutional determinants of various kinds.

The review of empirical research begins in Chapter IV with a study of the student's own perception of his choice situation. Firstly, it is shown that occupational motives are perceived to have a strong influence on his choice of education at secondary and higher levels. Secondly, the student's confidence in his own choice is very much dependent on his family background.

Two chapters present the relationships between individual determinants and educational choice. Chapter V deals with characteristics of the student himself, such as sex, intelligence, educational achievement, interests, and aspirations. Chapter VI takes up characteristics of the student's personal environment, such as family background, peer group, and the "climate" and student composition of his school. Except for the two last groups of variables, whose independent contributions are still somewhat problematic, these individual determinants have a strong bearing on educational choice. For some variables, such as sex and family background, this influence is often unwanted but has proved hard to break. To some extent,

this is also true of the influence of general intelligence in contrast to specific abilities. Since most of the individual variables refer to rather stable characteristics they are not likely to be very effective in predicting and planning for change.

Two chapters present the relationships between institutional determinants and educational choice. Chapter VII deals with characteristics of the educational system itself: curriculum, differentiation system, guidance organisation, etc. at the stage before choice, and admission rules, geographic availability, and study finance at the stage that the choice is made for. All these conditions seem to have considerable importance but the empirical evidence is less complete than for the individual determinants. Finally the influence of the strategy of recurrent education on individual demand is discussed.

In Chapter VIII, the institutional determinants are sought outside the educational system and three main groups of conditions are surveyed: demographic factors, occupations and economy, and social and cultural conditions in general. Labour market conditions seem to be a particularly fruitful area of research but rather little has been done up to now with individual demand for education as an explicit dependent variable.

The review of research on different determinants is followed in Chapter IX by an application or a "case study" of recent trends and changes in Sweden which are described and analysed. Since 1968 when both graduation from university-preparatory lines at upper-secondary level and admission to universities reached their maximum levels to date, important changes have taken place in educational demand: a drift from general and theoretical to vocational and practical branches at upper-secondary level, a decrease in the direct transition of secondary graduates to university, and an increase in the entry of adult students without full secondary preparation. In addition a "swing from science" has occurred both at secondary and university level. Factors in the educational system itself as well as labour market conditions seem to have contributed to these changes.

In the concluding chapter a distinction is made between <u>planning for adjustment</u> of educational provision to changes in individual demand and <u>planning for change</u> of the educational system in order to influence individual demand and reduce biases in choices. For both functions an efficient statistical feedback from the system is necessary as well as a better understanding of factors that are behind individual demand and its changes. It is concluded that much more is known about stable individual factors behind choices than about factors that affect changes in demand. Among the more specific suggestions is that of constructing an advance warning system for changes in demand based on a closer study of groups of "marginal chooser".

Chapter I

TRENDS IN INDIVIDUAL DEMAND FOR EDUCATION

In most industrialised countries the period after World War II was characterised by a rapid expansion of the enrolment in post-compulsory education. The OECD survey of the development of higher education 1950-1967 (OECD, 1970) showed, for example, that the number of new entrants to university-level education was, on the average, about three times greater in 1966/67 than in 1950/51. In general, the rate of yearly increase was greater in the 60's than in the 50's. Similar trends were also found for other types of non-compulsory education.

The development from 1965 onwards has been studied by the European Cultural Foundation Institute of Education and preliminary results were reported by Cerych (1975). The trends during the last ten years differ considerably from country to country within that period and in the individual countries when comparisons are made with the preceding ten-year period covered by the OECD survey. Table I shows the proportion between final and initial numbers of new university entrants in the two ten-year periods.

Table 1

NEW ENTRANTS TO UNIVERSITY LEVEL EDUCATION
IN TWO TEN-YEAR PERIODS

(Final numbers are in proportion to initial numbers)

	1955/56-1964/65	1965/66-1974/75	Difference
Denmark	2.9	1.8	-1.1
France	2.7	1.2	-1.5
Germany	1.5	2.1	+0.6
Italy	2.1	2.2	+0.1
Japan	1.6	1.5(1)	(-0.1)
Netherlands	2.5	1.4	-1.1
Sweden	3.2	1.3	-1.9
United Kingdom	1.7	1.4(2)	(-0.3)
United States	1.7	1.1	(-0.6)
Yugoslavia	1.8	2.0	+0.2

1) Last year 1972/73.

2) Last year 1973/74.

For most countries the increase during the two periods was fairly regular and the final year the highest during each period, but there were a few notable exceptions. Yugoslavia had a first peak at 2.3 in 1960/61, and after a drop it took another eight years to get back to this level. France had a drop in 1968/69 and 1969/70 but recovered rapidly after that. Sweden had a higher increase than any other country until 1968/69 when it reached 1.8 in the second period, but after that there was a strong negative trend except for the last year in the period. In contrast, most of the expansion in Germany has taken place during the last few years.

Germany is almost the only country where the expansion has been greater in the later period, and moreover it started to gain impetus as late as in 1968/69. In the United States the expansion seems to have ceased completely. Many factors have influenced these trends. For instance, the level of participation in 1965 was very high in the United States and fairly high in France and Sweden. In Germany it was low, but this was true also for the Netherlands and the United Kingdom with a quite different pattern of growth. Demographic trends also account for part of the differences.

Entry to universities is only one indicator of the development of post-compulsory education. In some countries there has been a rapid expansion of upper-secondary education which has not yet influenced the post-secondary level. In some countries, post-secondary education of non-university type has expanded much more than university education. In the United States, for instance, the total enrolment in institutions of higher education doubled between 1963 and 1973 (The Condition of Education, 1975, Ch. 7). The increase was about 70 per cent for 4-year programmes in universities and colleges but about 250 per cent for 2-year institutions (junior and community colleges).

There are also structural changes in the composition of the student body. In the United States, older students, especially women, account for an increasing proportion of the college students. In Sweden the decreasing trend would have been even stronger if older students without full secondary preparation had not partly compensated for the drop in the number of students transferring directly from upper-secondary school to university.

The changes in number and composition of the students have been combined with changes in the choice of study programmes. In the United Kingdom and Sweden, for example, the education authorities are very much concerned with what has been called the "Swing from Science" (cf. Duckworth & Entwistle, 1974) which means a decrease in the numbers choosing mathematics, physics and chemistry both at upper-secondary and university level. Even in the short run this will have negative labour market consequences.

This brief overview with its scattered examples tries to give an indication of the kinds of problems confronting educational planners when they attempt to foresee and adapt to changes in demand for education. The next chapter outlines more precisely the functions and limitations of the present study of the factors behind individual demand and its changes.

Chapter II

BACKGROUND AND DEFINITIONS

This report presents a theoretical background to the study of individual demand, a review of empirical research findings and an application of them to recent trends and changes in one country. Sweden was chosen for this not only because of the author's familiarity with the case, but also because of the interesting changes already referred to, which, to some extent, can be related to policy measures. This confrontation between research and its application will form the basis for conclusions and recommendations.

The original title of the activity under which this study was carried out included two concepts: student aspirations and private demand. It soon became evident that student aspirations should be treated as one of the determinants of demand rather than as a focal concept of the study. It was also found that the term "individual demand", rather than that of "private demand" used in the Secretariat's description of the activity, conveyed the intentions of the task more clearly. A third term was also considered, namely "social demand" which, in some contexts, is used to emphasize the contrast between the demand for education derived from the needs and aspirations of persons or groups of persons and the manpower needs of society. It is felt that this term should be reserved for cases stressing the social objectives, such as equality of education, for example.

"Individual demand" is used as a concept at the collective level where the decisions (choices, applications, etc.) of a specified group of individuals are aggregated. The numbers and their distribution that characterise this particular "market" for education can be compared with, and distinguished from, other measures at the collective level such as manpower demand, supply of educational facilities and enrolment.

Individual demand at the collective level is a result of decisions at the individual level. The definite quality of these decisions and their manifestation vary considerably. Interests, aspirations, desired goals, anticipated goals, plans, intents, choices, applications for entry, entry, and also drop-outs are all examples

of various stages along the way. It is not meaningful, however, to define these concepts strictly here since their operational definitions vary as among the studies referred to later. Some of these concepts may be regarded as direct bases for aggregating individual decisions to the collective concept "individual demand". Others may be regarded as pre-stages to such decisions. A strict delimitation is not possible in advance in either of these respects.

The focal concept of this study, individual demand, refers to education. Since educational decisions are often to be seen as intermediate decisions in a process of career development, the borderline between educational and occupational aspects in interests, aspirations, etc., is vague and it would be detrimental to the study to exclude occupational aspects simply for reasons of terminology. On the other hand, since it is not possible to deal with the full complexity of occupational decisions, there is a limit even though it is difficult to define it explicitly.

Individual decisions, and their reflection at the collective level, refer to a special locus within an educational or occupational system. Here both systems are conceptualised in two dimensions. The vertical dimension stands for level of education and status of occupation. The horizontal dimension stands for type or sector of education or occupation within a certain level. The concrete contents of such "grids" vary somewhat from country to country. It is probable that different factors are important for choices between levels and for choices between sectors. Both dimensions are interesting from the point of view of educational planning.

Far more seems to be known about the "vertical" than the "horizontal" choices. This is because of the strong research interest in two other related concepts at the collective level, namely mobility between generations in the educational or occupational status hierarchy and equality of educational opportunity between sexes, social classes, etc., in a society which is also studied mainly in the vertical dimension. Mobility and equality are also considered, but since they have been studied comprehensively in other recent OECD publications (Husén 1972, Husén 1975) generalisations can be taken over more directly in this area than in that of horizontal variations in choices.

Lastly, the time perspective of the decisions should be considered as an important specification. Research in career decisions often stresses the developmental nature of the process: a series of decisions and feedback from experiences successively lead to a specific occupation. Early and distant decisions may be of greater importance than those that immediately precede what looks like the occupational choice. The same is true for education.

Chapter III

MODELS OF CHOICE BEHAVIOUR

Most theoretical models of educational and occupational decisions focus upon occupational choices (cf. Watts, 1972, pp. 85-89). But since educational choices can be seen as intermediate decisions in a career development process the models may also be useful for the more restricted situation.

Blau, Gustad, Jessor, Parnes and Wilcock (1956) have developed a conceptual framework for occupational choice. Their schema has two sides: one for the individual resulting in a choice based on a compromise between his preferences for, and his expectancies of a certain occupation; one for the selection agency resulting in a hiring decision based on a compromise between ideal standards and realistic estimates of the availability of candidates meeting these standards. Occupational entry comes about when these compromises fit together. The framework is presented in Diagram 1.

The specifications in the different boxes have been left out in Diagram 1 since some of them are not very well fitted to educational choices. The general framework, however, is well adapted to serve as a model for entry into educational institutions, and the boxes that lead up to the individual's decision are directly relevant for the concept of individual demand.

One basic assumption of the schema is that only immediate determinants are directly influential upon the individual's choice. Other factors are relevant only to the extent that they in their turn influence immediate determinants.

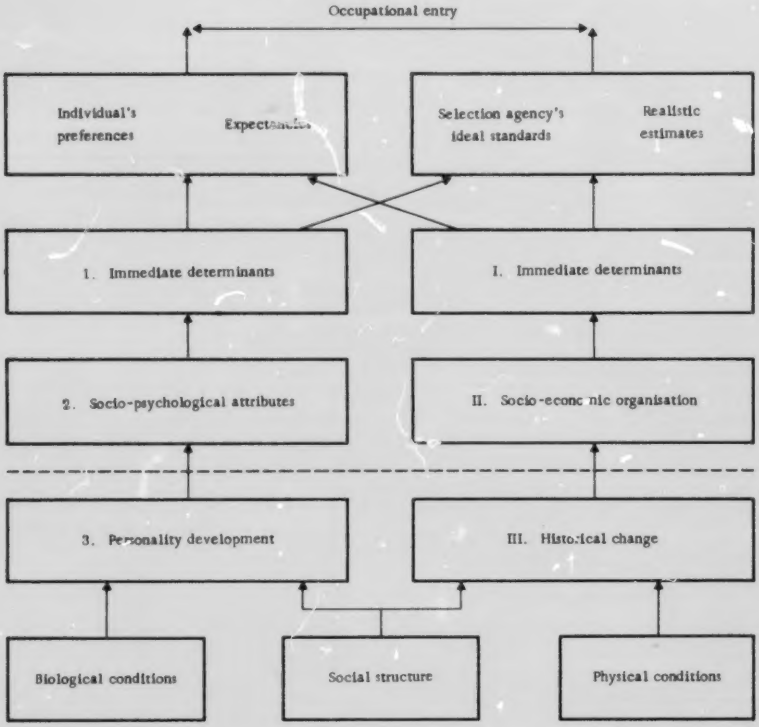
Immediate determinants of the choice come from both sides of the model and they are specified as follows.

1. Occupational information Technical Qualifications Social Role Characteristics Reward Value Hierarchy	I Formal Opportunities (Demand) Functional Requirements Nonfunctional Requirements Amount and Types of Rewards

Occupational or, in this context, educational information, plays a strategic role as a limiting factor in the choice situation.

Diagram 1

SCHEMA OF THE PROCESS OF OCCUPATIONAL CHOICE AND SELECTION*



* From Blau et al. 1956, p. 534

Only when the individual has a realistic knowledge about possible alternative actions in the choice situation, about the requirements involved and the rewards promised, is he likely to make a rational choice.

The individual has to come up to the requirements of the different choice alternatives in terms of both technical qualifications and social role characteristics. In an educational choice situation technical qualifications may refer, for example, to a certain level of attainment in some prerequisite subjects and a certain number of months of practical experience in a related occupational field. Social role characteristics have to accord with nonformal and, perhaps even nonfunctional, requirements, i.e. criteria not relevant to actual performance, set by the occupations to which the education is supposed to lead. In many occupations sex role expectations, for instance, are limiting factors that influence educational choice.

The individual's valuation of different rewards expected from possible alternative educational choices or from the occupations they lead to, are among the immediate determinants. The rewards that may be involved refer both to the intrinsic intellectual, emotional and social satisfaction of the educational experience and to the income, prestige, security, working conditions, etc. This reward structure is necessarily multi-dimensional, but the model presupposes that it can be transformed into a hierarchy of valuation.

The immediate determinants result in preferences and expectations which have to be matched against each other. The relationship between these two components and the immediate determinants is complex. The individual's information sets limits not only to the number of possible actions he may take, but also to the predictive validity of his estimated probability to succeed in and obtain the rewards from different alternative sections. His expectancy to succeed in a certain education depends not only on knowing that he meets the minimum entrance requirements but also on estimating whether his qualifications are strong enough in a competitive situation before or during the education he is considering. This estimate is likely to influence, for instance, the decision to apply for studies with numerous clausus. His expectancy to obtain the occupational rewards for which the education aims to be instrumental must also seriously weight the social role characteristics.

The reward values influence preferences for alternative actions. In the choice situations of educational systems the preferences may be related to the two-dimensional conceptualisation of educational systems (cf. page 15). The vertical dimension stands for level of education, the horizontal for type or sector of education. The preference for a certain locus in this system may be thought of as based upon two components: an aspiration for a certain level and an interest for a certain type of sector. For some individuals the ranking of preferences may be based mainly on differences in interest, for others mainly on differences in aspiration. But "mixed" rankings are also possible. If aspiration is linked with the vertical dimension (cf. Dunér, 1972, P. 34) and interest with the horizontal one, it is easier to clarify the causal differences that may exist between these dimensions.

Blau et al. (op. cit.) do not present a full theory of occupational choice, but from their examples it is evident that they regard the compromise between preferences and expectancies as a developmental process where choices are tested against the reality represented by the selection agency. Through a sequence of choices and feedbacks a balance is successively brought about and often at a level in the preference hierarchy which is lower than the starting level. The starting level, in its turn, is likely to vary with, for instance,

the individual's willingness to risk failure and choose high preference/low expectancy alternatives instead of safe but less attractive ones.

The parallel between occupational entry and entry to studies with numerus clausus is striking. Even in the free admission institution, however, the individual's decision is tested against reality. His "technical qualifications" are checked in examinations and his interests and social role characteristics must measure up to the educational situation in general. Often he has to be his own judge and decide to drop out or change to an alternative. This gradual attrition in non-selective institutions has been called the "cooling-out" effect (Clark, 1960).

The aggregated individual demand for a certain education at a certain point of time is likely to be composed of individuals in varying stages of their sequence of compromise - some still high up in their preference hierarchies, others chastened in their search for a suitable "engagement". For some the decision is based on attraction, for others on repulsion from other alternatives, and still another group regard it as an interim choice - a postponement of the "real" decision (cf. Sjöstrand, 1968, p. 289).

Occupational choice theories differ as to the kinds of factors or processes that are regarded as decisive in the choice situation. Hilton (1962) describes five earlier models and one of his own construction. A rather simplistic model is attribute matching where the individual compares his own attributes with those required in each of some set of occupations. The need-reduction model, closely related to dynamic personality theory, stresses the emotional components of the choice. The probable gain model is related to models of rational behaviour employed in economics. The social structure model is sociological in its orientation and emphasizes the social mobility provided by certain choices but also the limits set by the social context to which the individual belongs. The complex information processing model deals with the limitations of the individual's capacity to handle information about more than a restricted number of alternatives. The framework presented by Blau et al. (op. cit.) contains important elements from all of these. Hilton himself proposes reduction of cognitive dissonance among a person's beliefs about himself and his environment as the main motivating factor in career-decision making. In some of these theories the individual is supposed to function according to a compensatory multiple-regression type of model, weighing together a great number of factors; in others he treats the information in a multiple cut-off fashion excluding alternatives that do not come up to a certain level of expected pay-off.

Empirical research has only dealt with the compromise process in educational choice to a limited extent and the theories have not been proved. They remain as interesting and probably complementary hypotheses for the interpretation of choices observed in descriptive and correlational studies. These studies have concentrated on the more distant determinants in the framework of Blau et al.; in other words, on those boxes that precede the immediate determinants.

There will be no detailed treatment of the content of these boxes here but it should be noted that the distant determinants are divided into three stages. "Socio-psychological attributes" describe a number of aspects of the individual that influence his "immediate determinants" - such aspects as abilities, attainment, social position and relations. These in turn are related to his "personality development" (education, socialisation, family conditions). Personality development is based on the individual's "biological conditions" and the existing "social structure".

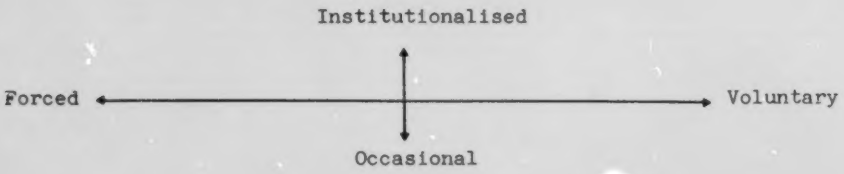
In these preceding boxes are found most of the variables that will be studied in the chapters on the relation between choice and independently measured variables, whereas the less frequent research on the student's own perception of his choice situation deals more directly with immediate determinants and the compromise process. Even at this early stage it is possible to make two assertions about this distribution of the research effort:

1. It is likely that it has given rise to more knowledge about stable and fairly resistant factors behind educational choice than about factors that influence changes in individual demand.
2. A discrepancy between the motives perceived by the individual and the relationships shown to exist between choice and independently measured variables does not necessarily indicate a lack of validity at the subjective level because the two research approaches relate to different steps in the causal sequence.

Before going to empirical studies it may be helpful to present a classification of choice situations used by Sjöstrand (1968,p.293) and further developed by Grahm, Sjöstrand and Wingård (1971, p.127). Choice situations arise in different ways according to the two-dimensional model in Diagram 2. Most choice situations within formal educational systems are institutionalised and forced. One stage (branch, school, etc.) ends at a predetermined time and a specified set of possible alternatives is available at the next stage. After the compulsory stage, the alternatives include leaving the system. In adult education, on the other hand, choice situations tend to be voluntary and occasional - in principle regulated by the individual

Diagram 2

DIMENSIONS IN THE ORIGIN OF CHOICE SITUATIONS



himself, although there may be strong structural limitations in his situation that more or less force him into a choice. Examples would be dissatisfaction with his present occupation or the end of his employment.

The educational system is often intentionally constructed in such a way that the consecutive choice situations - in addition to presenting appropriate options - function as "development tasks" for the student. They are, in other words, situations that train him for further and more complicated choices (cf. Super, 1957, p. 286). Such intentions are most explicitly stated in comprehensive systems where different paths are kept together in one institution. One of the major technical difficulties in constructing such systems has been to avoid definite choices at an early age and to keep channels for transition from one path to another open as long as possible.

Chapter IV

THE STUDENT'S PERCEPTION OF THE CHOICE SITUATION

Motives

Asking the student about his motives for a certain decision is a direct method of approaching the choice process and it has great prima facie appeal. For several reasons, however, it may be regarded with suspicion (cf. Lazarsfeld and Rosenberg, 1955, pp. 387-391, Sjöstrand, 1968, pp. 218-220). The student cannot report motives of which he is not aware. If he has to consider motives presented in a questionnaire he cannot indicate those which do not appear. Some motives seem more respectable than others and are likely to be overchosen. Even with the best will in the world the student may fail to give a valid report, since weighing motives against each other is a very difficult task, especially when they belong to different spheres of content. Factors that are near in time and factors that vary strongly from one choice alternative to another are more likely to be perceived as influential than distant and common factors which may, from an objective point of view, be the more important ones.

The first criticisms are valid for all direct methods. The ones mentioned last presuppose that there is a correspondence between the motives perceived and the influences which are objectively determined by the relationships between choice and independently measured variables. As stated this is not always a proper criterion to judge perceptions by since - correct or not from an objective point of view - they exist among the students. If they are measured in a reliable and consistent way and are used to complement more objective methods they contribute to the comprehension of the choice process as seen from the individual's point of view, and particularly so in the phase that immediately precedes the decision.

Direct questioning on motives or reasons seems to have been used more often in studies on occupational entry and change than in those on educational choice (cf. Sjöstrand, 1968, Ch. 6). A study of motives and factors in the choice of upper-secondary education carried out for a Swedish government commission (Härnqvist and Grahm, 1963) will be used to illustrate this approach in education.

Students in the "academic" stream of the last grade of the lower-secondary school stated whether they had applied or not for entrance to the gymnasium (a university-preparatory upper-secondary school). Among other items, the questionnaire also proposed motives or reasons for the choice of the gymnasium and of a certain branch to be filled in by those intending to enter the gymnasium. In the same way for those having other plans (vocational schools, work, etc.) motives for not choosing the gymnasium were proposed. The sample was made up of students from all over Sweden; 2,809 applying to the gymnasium and 1,633 not doing so.

In Table 2 responses to five items out of a list of fifteen motives for choosing the gymnasium are reported. The percentages show the proportion of students who marked the motives as having been of importance in their decision to apply for entry. The students could mark as many motives as they liked. The question is retrospective but not very much so since the investigation was done approximately at the time when the applications were made and long before anybody knew anything about success or failure in the alternative chosen.

Table 2

MOTIVES FOR CHOOSING THE GYMNASIUM

Item No.	
1	I have to go to the gymnasium if I want to take up the occupation I like most.
15	I don't know which occupation I shall choose so I had better remain in school.
10	I like school so much that I would like to continue.
3	My school marks are good enough for admission to the gymnasium.
14	I prefer theoretical studies to practical work.

Item No.	Per cent marking item		
	Total	Male	Female
1	68	74	60
15	36	-	-
10	39	33	45
3	42	-	-
14	22	-	-

Source: Härnqvist and Grahm, op.cit. pp. 74-76.

There were two occupational motives - one positively and one negatively formulated (No. 15 and No. 1). Most students mentioned one of these and the positive motive dominated, especially among

men. "Liking school" was most often indicated by women. (Where no sex differences occurred only totals are reported.)

Table 3 reports a complementary set of motives for not choosing the gymnasium.

Table 3

MOTIVES FOR NOT CHOOSING THE GYMNASIUM

Item No.	
1	I don't need to go to the gymnasium to be able to enter the occupation I like most.
15	I prefer to start working and earn money now.
10	I dislike school so much that I would rather leave.
3	My school marks are not good enough for admission to the gymnasium.
14	I prefer practical work to theoretical studies.

Item No.	Per cent marking item		
	Total	Male	Female
1	60	49	65
15	44	-	-
10	27	40	22
3	66	71	61
14	44	48	40

Source: Härnqvist and Grahm, op.cit., pp. 79-81.

Here the young women more often saw no need for the gymnasium from an occupational point of view and young men more often decided not to go because of lack of school satisfaction and school marks. This picture is consistent with the findings in Table 2.

Table 4 shows some occupational and educational motives for choosing a certain branch of study. Each student rated only the branch of his first choice, and there are three branches offered: general, language-oriented and natural science-oriented.

Interests and earlier success or failure in school seem to be more influential in this choice situation than in the ones reported earlier. This is most evident for those who have chosen the language option. Occupational motives are relatively stronger in natural sciences. The differences are even larger in two motives not mentioned in the table which refer to the branch chosen as having the greatest number of occupational possibilities and as the one leading to the most highly paid occupations. The language students had very little faith in these two.

Table 4

MOTIVES FOR CHOOSING A CERTAIN BRANCH OF STUDY

Item No.	
4	This branch leads to the occupation that interests me most.
9	This is the branch for those who want to enter the occupation I plan to choose.
2	This branch offers the subjects that interest me most.
7	The subjects where I have the highest marks are in this branch.
3	By choosing this branch I avoid the subjects where I have the lowest marks.

Item No.	Per cent marking item		
	General	Language	Science
4	50	54	68
9	36	38	48
2	58	80	71
7	50	58	44
3	35	58	20

Source: Härnqvist and Grahm, op.cit., pp. 82-84.

The sex and branch differences that have been reported may be taken as an indication that the motives, however subjective they may be, mirror some sort of realistic perception of the choice situation. Further indications are found in comparisons with the students' school marks and with their social background. The relationship between "mark motives" and mark level is as follows:

	Among students with marks		
	above median	below median	Difference
Students choosing the gymnasium because their marks are good enough (Item No. 3 in Table 2)	52%	16%	+35%
Students rejecting the gymnasium because their marks are not good enough (Item No. 3 in Table 3)	31%	78%	-47%

(Condensed from Härnqvist and Grahm, op.cit., pp. 103-105.)

Three motives for choosing the gymnasium, not reported above, deal with the parents' economic situation and expectations.

Item No.	
4	My parents can afford to let me stay on at school.
7	My parents want me to study and I respect their wishes.
12	It has always been intended that I should graduate from the gymnasium.

When the students were divided according to their parents' education and socio-economic status (SES) in a high and low group, these items had the following response frequencies. (Small groups with high-low and low-high combinations excluded.)

Students mentioning	Parents' education and SES		
	High	Low	Difference
Item No.			
4	54%	35%	+19%
7	44%	33%	+11%
12	36%	13%	+23%

(Condensed from Härnqvist and Grahm, op.cit., p.103.)

Lastly it will be shown that motives for choosing the science branch were related to differences in attainment among groups of subjects (Table 5).

Table 5

MOTIVES FOR CHOOSING THE SCIENCE BRANCH

Item No.		Among students with higher marks in:		
		Maths and Sciences	Languages	Difference
2	This branch offers the subjects that interest me most.	83%	62%	+21%
7	The subjects where I have the highest marks are in this branch.	60%	24%	+36%
3	By choosing this branch I avoid the subjects where I have the lowest marks.	29%	12%	+17%
8	Greatest number of occupational possibilities.	43%	71%	-28%
1	Most highly paid occupations.	26%	38%	-12%

Source: Härnqvist and Grahm, op.cit., p.113.

Educational motives were more frequent among those having relatively better marks in mathematics and sciences than in languages. The vague occupational motives (Nos. 8 and 1) are more often cited by

those with high marks in languages, which fits well with the finding mentioned earlier that those choosing the language line very seldom (8 respectively 7%) said that they did so for such reasons.

Among the motives not mentioned above were a number of items referring to examples of friends and peers, and advice from peers and teachers. These generally received low response frequencies, often less than 10 per cent. One item in each set of questions dealt with the availability of a gymnasium or a particular branch of study in or near the students' home town. These motives were marked to a moderate extent but more so in sparsely populated parts of the country than in the big cities. This may seem paradoxical but can be understood as an effect of different frames of reference. Where nearness to all kinds of cultural resources is self-evident it is not perceived as important. Where nearness is exceptional it is noticed and valued.

The same or similar categories of motives for upper-secondary choices in Sweden were used in later studies by Bengtsson (1971), Carlsund (1971), and Andrae (1972). In general, the findings of Härnqvist and Grahm were corroborated. There was a predominance of occupational and educational motives whereas social and personal influences tended to be mentioned infrequently. Males tended to choose a university-preparatory education for occupational reasons and to reject it because of lack of satisfaction and success at the lower secondary level. Females tended to choose it for educational reasons and reject it because of lack of occupational opportunities.

Gesser carried out other studies in Sweden on subjective reasons for choices made at the post-secondary level, together with a number of other and more objective variables. One investigation (Gesser, 1971) covered students registered for the first time at Lund University in 1960, 1964 and 1968; another (Gesser and Fasth, 1973) a national sample of students one year after graduation from the gymnasium. The categories of motives differed between the two studies, but in both of them items referring to the occupations to which the education was expected to lead were most frequently marked. Personal influences were mentioned more often than in Härnqvist and Grahm but strict comparisons are difficult between age groups and between categories that differ so much in format as these did.

The value orientations towards higher education among American college students were studied by Meier (1970). The students also had to report their perception of the value orientation of their parents. In the analysis Meier grouped his ten orientations into two categories: instrumental goals and expressive goals. An instrumental goal, preparation for an occupation, was most frequently chosen both by the students in terms of their own orientation and as the perceived orientation of their parents. Next among the students'

orientations came the expressive goal of intellectual development. In general, the students ascribed more instrumental orientations to the parents, especially their fathers, than to themselves and vice versa for orientations referring to self-expression.

In a Swedish investigation of participation in adult education by young men with compulsory education only, Rubenson (1975) studied, among other things, the motives for participation. Rubenson referred to Boshier (1971) and Burgess (1971) for similar studies. In a list of fifteen motives the six which occurred most frequently were:

To find personal fulfilment	77%
To be better educated in general	70%
To do one's job better	66%
To be able to advance	60%
To get better pay	59%
To get more secure employment	57%

(From Rubenson, op.cit., p. 116)

Both expressive and instrumental goals were strongly represented. The occupational motives varied in a meaningful way between different kinds of adult education (op.cit., p. 120). Part of the questionnaire had been administered to the same persons three years earlier before their participation, and the same motives tended to be chosen on each occasion (op.cit., p. 128).

Confidence about choices, information and advice

Härnqvist and Grahm (op.cit., p. 59) asked their students to what extent they were confident about their choices. Fifty per cent found their decision to enter the gymnasium "self-evident", one third reported difficulties in choosing, but thought they had made the right decision and the remainder reported that they had found it very difficult and might change their minds. Among those not choosing the gymnasium confidence about their "non-choice" was somewhat lower. The degree of confidence was related to a number of other variables, for instance, sex, school marks and family background, as shown in Table 6, where the percentage choosing to enter the gymnasium is also reported.

Table 6

PERCENTAGE CHOOSING TO ENTER THE GYMNASIUM AND PERCENTAGE FINDING THIS CHOICE SELF-EVIDENT

School marks	Parents' education or SES	Choice of gymnasium		Choice self-evident	
		Male	Female	Male	Female
High	High	95	85	73	64
High	Low	77	53	45	36
Low	High	57	34	50	46
Low	Low	27	14	28	22

Source: Härnqvist and Grahm (op.cit., manuscript tables).

The table has three cross-classifications which makes it possible to measure the independent contributions of each. For example, the average difference between males and females for all pairs of cells that are similar in the other two classifications is 18 for choice frequency and 7 for self-evident choices. The differences are tabulated below for the three factors studied.

Average difference due to:	Choosing	Self-evident
male sex	+18%	+ 7%
high marks	+44%	+18%
high socio-economic background	+25%	+25%

For choice frequency the effect(1) of mark level is considerably stronger than that of family background and sex. Belonging to the positive category in all three respects means a difference in choice frequency of 87 per cent, which leaves very little variation unexplained. For confidence ratings the effect of family background remains at 25 per cent but those of mark level and sex decreased to less than half. Together they explain 50 per cent of the variation. Family background is relatively more important for confidence than for choice frequency.

Students feeling very insecure about their choice of the science branch were compared with students finding this choice self-evident. The groups differed both in perceptions and objective factors. The insecure group reported much more frequently that they chose sciences because of the many occupational possibilities and because they had no occupational plans and had better remain in school. The confident group stressed the importance for the occupations they planned to choose and the subjects to be studied among which they found both the most interesting ones and those where they had the best marks (op.cit., p. 138). The availability of the branch of study in or near their home community and personal influences were regarded as more important by the less confident group. In a series of questions related to the guidance resources of the school less confident choosers reported a greater need for information and advice.

The students indicated with whom they had discussed their choice situation and from whom they had received the most valuable help (op.cit., pp. 216-221). Parents were at the top of both lists. Older siblings, peers and guidance officers were also mentioned fairly often while teachers and school administrators got rather few votes. The parents' education was an important factor influencing

1) Average difference corresponds to the unweighted estimate of effect in the multivariate analysis of attributes developed by Coleman (1964, Ch.6). Such effect measures are used now and then in this report to condense information. When any of the cell frequencies is low (below 50) weighted measures are used.

which persons were considered as giving the most valuable help. When one or both parents had education beyond the compulsory level they had more influence. At the lower level of parental education the guidance officer was chosen more frequently. The study by Gesser and Fasth (1975, p. 126) corroborated the relatively greater importance of the guidance personnel for students from lower socio-economic strata.

A minor part of the sample in Härnqvist and Grahm's investigation came from the comprehensive school which at the time of the investigation only existed in parts of Sweden. In this school guidance services were much more integrated into the regular school activities than they were in the traditional lower-secondary schools. The students in comprehensive schools mentioned school personnel more often than students in the former traditional system (op.cit., pp. 224-226). Later studies by Bengtsson (1971) and Andrae (1972) seem to support this finding.

Discussion

This chapter on direct assessment of students' perceptions has been based mainly on one study. There are several reasons for this. It is well known to the author who thinks that it merits attention outside the Swedish language area. There are rather few studies of educational choices that combine subjective and objective information and push the analysis as far as this one does. It was also presented as a way of preparing the ground for an argument for a further development of the methodology in the field - for better balanced accounting schemes that can be used for regular surveys of trends among students in their choice situations. In order to plead this case it has been demonstrated at some length that the method has room for both realism and sensitiveness.

As regards substantial results the study was more valuable in the particular situation where it was done - as background material for a reform of the Swedish gymnasium - than it is now. A dozen years later, however, it still allows some conclusions to be drawn.

The students' perceptions of their motives and confidence about the choice situation are related in a meaningful way to such objective information as the level and profile of their school marks and the educational and socio-economic level of their parents. Occupational and educational motives dominate in their perception in comparison with social and personal influences. Students whose choice is motivated by an alternative which corresponds to their plans, interests and school marks behave differently from those who reject an alternative because it does not permit them to postpone decisions or avoid low marks. Occupational motives push boys upwards in their educational aspirations and keep girls down; educational motives push girls upwards and keep boys down.

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Educational motives are closely linked to success and failure in school and thus tied to stable characteristics of the individual and his family which develop early and are hard to influence at the age level where choice situations occur. Occupational motives seem to be more sensitive to changes in the labour market situation, although some students are more likely to be influenced by such changes than others. In order to predict demand it is important to be able to identify the characteristics of the marginal choosers - those who are the first to enroll in a positive phase and the first to leave in a negative one. The simple question about the student's confidence in his choice indicated that lack of confidence, a sign of marginality, was relatively more dependent on family background than the choice frequency itself, at least at secondary level and in a situation like that of the early sixties with a strong upward trend in participation. Lack of confidence was also associated with more vague occupational motives for the choice.

Less confident students rely more on personal contacts in their choice and need more information and advice. Students from lower socio-economic groups - many of them less confident in their choice of further education - are the ones most dependent on institutionalised guidance services in the school. In schools with guidance services, school personnel play a more important role in the choice situation of the students.

Chapter V

INDIVIDUAL DETERMINANTS OF EDUCATIONAL CHOICE: STUDENT CHARACTERISTICS

The survey of the relationship between educational choice and independently assessed variables will be divided into four chapters. Chapters V and VI deal with individual determinants, i.e. roughly the left-hand side of the model by Blau et al. (cf. page 17). Chapters VII and VIII take up institutional determinants corresponding to the right-hand side of the model. As will be remembered, Blau et al. ordered their determinants according to their proximity to the decision into: immediate determinants, present socio-psychological attributes of the individual, personality development, and biological conditions. Here a more conventional organisation will be used and the presentation will be divided into characteristics of the individual, his family, his peer group, and his school environment. Education will reappear in Chapter VII from the point of view of institutional characteristics. In Chapter VIII demographic factors, occupations and economy, and social and cultural conditions are included.

Psychological theories of career decisions (cf. Super 1957, Super and Bachrach, 1957) stress that educational and vocational decisions are an integrated part of personality development. From this point of view it might be regarded as illogical to describe choice decisions as a resultant of more or less fixed individual characteristics. Rather, the process leading to a choice is a dynamic relationship between the individual and his environment where cause and effect are hard to isolate from the network of continuous interaction.

Nevertheless, a great deal of research on educational choice has been done on the basis of a trait model where choices are related to more or less stable attributes of the individual with no explanation of the intermediate processes - the variables intervening between attribute and choice. In general, no dramatic breakthrough has been made in this research during recent years and handbook treatments like Super (1957) and Super and Crites (1962) are still valid. For some of these attributes, results are so well known that this survey will simply illustrate and discuss them without going into

detailed documentation. The most interesting developments seem to be attempts to weigh individual attributes against other characteristics of the individual and his situation, and these will be documented in more detail.

Sex

Sex differences are most notable in choices between types or sectors of the educational system. They exist in the choice of optional subjects and branches at secondary level and in the choice of subjects, faculties and sectors in higher education. The differences seem to be fairly universal, with some exceptions in Eastern Europe. They have also proved to be fairly resistant to change.

Sex differences in participation at different educational levels vary between more and less developed countries. In less developed countries females are under-represented at all levels but increasingly so at levels beyond compulsory schooling. In more developed countries the differences have moved upwards to secondary, higher, or even in a few exceptional countries to graduate level, but in general males are in the majority at least at some levels (cf. UNESCO, 1967, OECD, 1970 b, pp. 43-51). In Chapter IV it was shown that the motives for choosing post-compulsory education differed between sexes and that males and females were likely to react differently in a marginal choice situation.

To some extent, sex differences in educational choice can be related to differences in attainment and interests at earlier levels of schooling. Much research, however, indicates that even these differences are culturally determined. Sex role expectations operate from a very early age (cf. Macoby, 1967).

Intellectual abilities

For the concept of intelligence and the nature of it as measured by intelligence tests, reference is made to a recent CERI monograph by Husén (1975, Ch. 3). The relationship between this trait and educational level is also well known. When educational paths are ordered hierarchically according to length and academic content, average scores on intelligence tests follow closely the same ranking. Most results, however, come from studies made after the end of secondary schooling, for instance at the beginning of military service, and at that stage differences among educational groups are a combined effect of selective processes and intellectual training. A study that tries to distinguish these sources of variation will be summarised here.

In 1961 Härnqvist and Svensson tested a ten per cent sample of the 1948 birth cohort in Sweden. Most of the sample were in grade 6

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of the compulsory school and were about to make their first choices between academic or non-academic programmes. In 1966 Härnqvist followed up the males at the beginning of military service (Härnqvist, 1968). The test scores at 13 years of age for 4,616 pupils were related to the education received during the five-year period which roughly covered lower and upper secondary education. Table 7 reports IQ equivalents for some major educational groups at different levels.

Table 7

AVERAGE IQ EQUIVALENTS AT 13 YEARS FOR MALES FOLLOWED UP TO 18 YEARS OF AGE

Categories	Education at 18 years	IQ at 13 years
13-15	Compulsory school only	91
16	Vocational school	94
26	Lower-secondary, academic type	106
	Upper-secondary, academic type:	
32	lower than final form	110
33	final form	118

(Condensed from Härnqvist, 1968, p.66)

The differences at 13 years between students receiving different types of education in the following five years mirror the relationships between measured intelligence and self-selection, selection, grade-repeating and attrition in the educational system. Even with these differences in averages there are substantial overlaps among groups.

The study also made use of comparable intelligence test scores from induction to military service at 18. It was shown that the groups with upper-secondary education scored considerably higher at 18 than might have been expected from their initial scores. The "gain" for those with upper-secondary education as compared with compulsory education was estimated to be about ten IQ units. A smaller part of this increase was due to an interaction between favourable home conditions (parents more highly educated, etc.) and schooling.

When Sweden changed from a selective to an elective comprehensive system at lower-secondary level, pupils could choose academic subjects according to their own and their parents' wishes. Self-selection took over at this stage and the relationship between academic choice and intelligence remained strong for the population in general. For pupils coming from the highest SES group, however, this mechanism of self-selection was to some extent inoperative in the first choice situation in the comprehensive system. These pupils

were likely to make academic choices irrespective of their intellectual level and earlier achievement (cf. Härnqvist, 1966, Reuterberg, 1968).

One attempt to break the hegemony of general intelligence has been to introduce choice alternatives which call upon different aspects of the individual's intellectual resources. One technique in the Swedish comprehensive school has been to allow choices of more or less academically oriented courses in different subjects to be made independently; for instance, it is possible to follow an academic language course together with a general mathematics course or vice versa, instead of "packages" of academic or non-academic courses. The hypothesis was that the individual's ability profile rather than his general intellectual level should influence his choice (cf. Härnqvist, 1960). The majority of pupils, however, kept on taking "package solutions", and it seems that the possibility of "splitting votes" was used mostly by marginal groups from intermediate SES strata. Even so, this technique, in combination with adjusted entrance requirements, has meant some broadening of the road to upper-secondary and higher education.

A similar line of reasoning was applied to the instructional level and led to some very active research called aptitude-treatment interactions (ATI, cf. Gronbach and Snow, 1969). The aim is to find different instructional "channels" for students with different types of intellectual resources, cognitive styles, or other attributes which may be differentially related to learning. One example is the relative influence of verbal versus figural abilities on learning through verbal or figural types of instruction (Gustafsson, 1976). The ATI approach has proved to be much more complicated than initially expected but some progress has been made and may eventually become important for a better understanding of choice decisions and individual demand.

The closest relationships between ability profiles and education can be expected to be found in the choice of study at the upper-secondary level and in higher education. There are differences, for instance, in verbal and spatial abilities between those choosing different branches of study, and tests of these abilities have been used for differential prediction of success in different types of education. In general, however, the relationships have turned out to be weak and have not always been in the expected direction. Three interpretations of this lack of regularity may be stated without documentation in this context.

- Profile differences account for a relatively minor part of the intellectual variation and they have lower stability over time than general intelligence.

- The influence expected to come from ability differences makes itself felt mainly through school achievement, but in school general adjustment to the situation, parents' and teachers' expectations, etc. strengthen the common element behind differences in achievement and attenuate the effect of variations within the individual's profile.
- Education in general is so dependent on verbal communication that verbal ability tends to override other abilities.

The attempts to make educational choices and success less dependent on one general intellectual factor may also be seen in a broader perspective. One approach is to introduce fundamental changes in school and make it a better environment for fostering activity, creativity, independence and other individual qualities associated with progressive trends in education. Another approach is even broader and tries to make the value and reward systems of society more pluralistic and less fixed in a one-dimensional, meritocratic hierarchy. Both approaches have relevance for the functioning of the guidance and selection systems, but they do not primarily aim at introducing other measuring instruments - creativity, for instance, instead of intelligence tests - in the choice situation (cf. Sandgren, 1974). Their influence is expected to come through a change in the evaluation of the individual by school and society and in his self-evaluation (cf. Sjöstrand, 1974). A closer analysis of this would lead too far from the focus of this report.

Educational achievement

Measures of achievement in school are among the most common and most effective prediction instruments in educational selection (cf. Lavin, 1965, Marklund, Henrysson and Paulin, 1968). Achievement is also strongly related to the process of self-selection in comprehensive, elective systems. In the Swedish samples studied by Härnqvist (1966) and Reuterberg (1968) the choice of academic electives for grade 7 of the comprehensive school was more closely related to achievement than to intelligence, both of which were measured in grade 6. Among the different measures of achievement, school marks were more predictive for the choice than scores in standardized achievement tests in the same subjects. Svensson (1971) in a study of relative achievement has shown that parents' and teachers' expectations are likely to have greater influence on marks than on standardized tests, and marks are the main basis for the selection to upper-secondary education.

Ample additional evidence could be cited for the importance of earlier educational achievement in the choice of level of education. Less well documented is the relationship between achievement profiles

and choice of type or sector of education. This problem has been touched on in Chapter IV and Table 5, where it was shown that motives mentioned by the students choosing their branch of study for upper-secondary school were meaningfully related to their profile of school marks. Table 8 shows the corresponding "objective" relationship between choice of sciences or technical studies and differences among individuals in school marks.

Table 8

PERCENTAGE CHOOSING SCIENCES OR TECHNICAL STUDIES AT THE GYMNASIUM IN RELATION TO SCHOOL MARKS

Maths and sciences	Languages	Male	Female
High	Low	90	59
High	High	81	53
Low	Low	63	30
Low	High	50	13

(Condensed from Härnqvist and Grahm, op.cit., p. 107)

The "effects" of the three classifications are as follows:

Average difference due to:	
male sex	+32%
high maths and science marks	+32%
high language marks	-11%

Maths and science marks have a strong positive effect and language marks a moderate negative effect on choice. Together they make for greater variation than sex in the choice of sciences for technical studies. In another study (Härnqvist, 1958, p.69) similar mark differences as early as grade 4 were shown to have some predictiveness for the type of upper-secondary and higher education 10-12 years later.

The relationships between achievement and choice are not, however, so straightforward as to mean that the level of education corresponds to the level of achievement and that the sector of education (at one and the same level) corresponds to the achievement profile. Very often achievement level also discriminates between branches of study at the same educational level. In the Swedish upper-secondary school, for instance, the science branch has traditionally been overchosen by students with high marks. The differences in marks are even greater between the new 2-year practical branches (cf. Chapter IX) where girls in nursing and health care studies not only beat the other branches at the same level but also all 3- and 4-year branches in average marks. Similarly, medical schools can select from a much

higher achievement level than other university faculties since they have restricted admission and only students with a high all-round level are admitted. In both examples, the attractiveness of the occupation must be the explanation.

In contrast, profile differences at the same achievement level could be expected to influence the choice of level within a sector; in the case, for instance, where the "higher" level affords a more all-round education and the "lower" level offers a more specialised application within the sector. This might very well be a determinant of choice between different levels of engineering education and lie behind the differences between technical studies and the sciences from the earlier example. Both may lead to higher education in technology, but the former leads directly to an engineering certificate. The only case where technical studies were able to compete on an equal footing with the sciences was for students below the median in languages and in the highest quartile in maths and sciences.

Returning once again to the model by Blau et al. (Chapter III) educational achievement may be seen as influencing - perhaps via "immediate determinants" - both preferences and expectancies. Behind the preferences are aspirations for different levels of education and interests in certain types or sectors. Both are affected by the student's previous educational experience: his liking for school in general and for different subjects which in turn interacts with his achievement and with the reactions to this achievement of parents, teachers, peers and other persons who are important to him. His expectations are influenced by his self-evaluation in general and by more specific information about the competitive strength of his earlier achievement. Rejection from selective schools and failure in school directly affect his achievement and may successively reduce the number of alternatives for which he possesses the necessary "technical qualifications".

Interests

The term has already been used to designate the horizontal dimension of the student's preference structure directly before the compromise leading to an educational or occupational choice (cf. page 18). The student is expected at this stage to express a specific interest for a branch of study, an occupation, etc., or to rank a series of such specific interests. In this context, when the explanatory variables which precede the choice situation are taken into account, a somewhat different meaning must be attached to the term. In this case, interests in broader areas of activities are considered in their relation to choices. The interests in these broader areas are measured by some kind of sampling of preferences for specific activities and sometimes for situations, occupations,

subjects in school and characteristics of people as well. This sampling is usually done by means of interest inventories and one of the problems in constructing them is how to select objects of preference and how to reduce a large number of specific preferences to meaningful composite scores for areas.

The two dominant American interest inventories, the Strong Vocational Interest Bank and the Kuder Preference Record, use techniques that differ very much from each other. Strong built his composite scores on observed differences in preferences between persons holding specific occupations and men and women in general. A high score on the engineering scale means similarity in preferences with engineers, no matter what content this similarity is based on. The other approach groups together objects of preference according to their content by means of either logical analysis or empirical study of correlations or both.

A great number of inventories of the content-scored type have been designed and used in investigations of educational and occupational choice. To return to a home-made illustration, the study by Härnqvist and Grahm (1963) relates the choice of branch of study in the gymnasium to interests in seven different areas. Average interests differed between males and females and among branches of study. The branches, which differed the most from each other in interests were the technical and the linguistic branches. Table 9 gives an idea of the maximal differentiation observed.

Table 9

PERCENTAGE OF STUDENTS WITH POSITIVE SCORES
FOR HUMANISTIC AND TECHNICAL-SCIENTIFIC INTERESTS

Interests/ Branch of Study	Male		Female	
	Language	Technical	Language	Technical
Humanistic	52	18	68	(41)
Technical-scientific	55	97	28	(76)

Source: Härnqvist and Grahm, op.cit., p. 129.

The two interest factors discriminated very clearly between males choosing the technical branch and females choosing the language branch. The results for females in the technical branch (in parentheses) were based on only 17 out of a sample of 1,354 girls.

Other interest areas and branches were less differentiated from each other. In most cases, males and females choosing the same branch differed in interest scores. However, when the scores were standardized for each sex separately, the relative differences between interest areas became rather similar for males and females in

the same branch. Still the interest profiles had only moderate discriminability, and they seem to share this characteristic with the other measures of the "horizontal" dimension - ability and achievement profiles - as compared with the "vertical" measures of general intelligence, overall achievement and maybe also aspirations.

If this observation is correct one might ask whether the "horizontal" dimension is "weaker" as such or only measured in a less reliable way. As regards ability and achievement the hypothesis has already been put forward that schooling tends to strengthen the common element in performance, to straighten out profiles or to disregard qualities of the individual outside the verbal and logical reasoning area. To some extent, a similar modelling and levelling process may also go on in interests. The vertical dimension in ability and achievement tends to gain support also from social background and family aspirations with which these differences are correlated. A similar strengthening interaction is hard to think of for the horizontal dimension.

Stability over time tends to be lower for interests than for performance and this has been a negative influence on the predictiveness of the influence of early interests on choices. To some extent, however, technical explanations are also needed. Interest measurement is less developed from a methodological point of view than the measurement of abilities and achievement. Instruments used in research are often constructed ad hoc with minimal pre-testing and armchair rather than empirical development of content dimensions. Through regular test construction procedures it would be possible to increase the correspondence between interest areas and educational choices. On the other hand, this correspondence cannot be developed too far without running the risk of making the instruments tautological in relation to choice - just another way of saying: "I would like to enter this branch".

Aspirations

The vertical, "aspirational", dimension of preferences is likely also to have its counterpart among the explanatory variables in terms of more general tendencies in the individual to strive for status and achievement. This domain is less uniformly organised than that of interests, and its variables have been studied in relation to academic and occupational performance rather than to choice (cf. Lavin, 1965). The influence of, for instance, self-evaluation, level of aspiration, achievement motivation which all, logically at least, belong to this domain are thus considered to be mediated through achievement: they influence achievement and achievement opens up possibilities for choice. It is very likely, however, that motivational variables of this general kind also exert a direct influence on choice of level in the educational system.

In some studies educational plans or the choice itself are taken as an indicator of aspiration but then a tautological relationship develops and this does not add to the explanation of the individual's decision in that respect though it may be of interest in relation to later events in his career development (cf. Duncan, Featherman and Duncan, 1972, Chapter VI).

Chapter VI

INDIVIDUAL DETERMINANTS OF EDUCATIONAL CHOICE: PERSONAL ENVIRONMENT

Family background

The relationship between educational choice and the cultural and socio-economic conditions of the home and family has been treated in several very penetrating works during the last few years. Husén has surveyed the research on social background and educational choice and attainment in three recent volumes (1972, 1974, 1975). Jencks et al. (1972) have made a critical review of the effects of family and schooling upon adult life chances. Duncan, Featherman and Duncan (1972) have treated the same problem in a specialised methodological context - that of path analysis. Boudon (1974) has used macro-sociological simulation for studying the consequences of different assumptions on the development of educational and social inequality. Sewell and Hauser (1975) have brought to its conclusion a long series of investigations on the factors behind early occupational status attainment. A great number of interesting background papers were prepared for an OECD seminar on education, inequality and life chances (1975). The list could be made even longer.

To review all this material in a few pages is an impossible task. There follows a brief statement of the present situation regarding background and educational choice based on general impressions from various sources. Some of the studies that try to distinguish between different types of influences in the home environment will then be presented. In selecting these it has been borne in mind that the purpose of this report is not to study equality of educational opportunity but individual demand for education, especially from the point of view of planning and implementation.

Considerable differences still exist in participation in non-compulsory education by students from different cultural and socio-economic backgrounds. This is shown to be the case not only in Western countries but also in Eastern Europe, for example, (Rutkevich, 1969, Sauvy et al., 1973). Even in countries where equality of opportunity has long been a major target for educational policy the socio-cultural differences in choice of level of education

have been resistant to change - almost as resistant as the sex differences in choice of sector. From the planning point of view, these are the major stable elements in the demand situation, but they are unwanted. Still, some changes are taking place. As the general level of education rises in a society, the zone where decisions to continue education are problematic to the individual moves down the SES scale little by little. At the top and the bottom of the SES scale choices are still rather fixed and predetermined in most countries. A similar generalisation may be true in relation to level of education: as the average level of education rises in a society the stages where social handicaps have their strongest influence move up the scale - from lower-secondary to upper-secondary, college or even to graduate education. In Gesser (1971, pp. 148-155) there is an example that shows such a trend in Sweden for "prestige" educations at university level (medicine, law, etc.).

Boudon (op.cit., pp. 22-24) categorises different theories that have been proposed to explain socio-cultural differences in educational choice:

- According to the "value" theory (represented by, e.g. Hyman) different social classes have different value systems that influence their attitudes towards the benefits of education.
- The "social position" theory (represented by Keller and Zavalloni) points to the difference among social classes in the "social" distance they have to "travel" in order to reach a given educational level, and the costs involved - economic as well as social - compared to the benefits anticipated.
- The "cultural" theory maintains that inequality of educational opportunity is generated mainly by differences in cultural opportunities among families in different social classes - differences that the compulsory school is not capable of neutralising.
- Additional factors that may be important and are likely to be correlated with social class are, for instance, permissive interpersonal relationships in the family and differences in attention given to children in families of different size.

By means of survey data and school statistics, Boudon shows that the "culture" and "value" theories do not suffice to explain the existing relationships between background and experience. The "culture" theory may explain what he calls a primary effect of social stratification, namely that students from different backgrounds differ in achievement and this influences their choice. When achievement is controlled, however, there remain great differences in choice among the social classes. Here the "value" theory might offer some help but it does not explain existing differences within social classes.

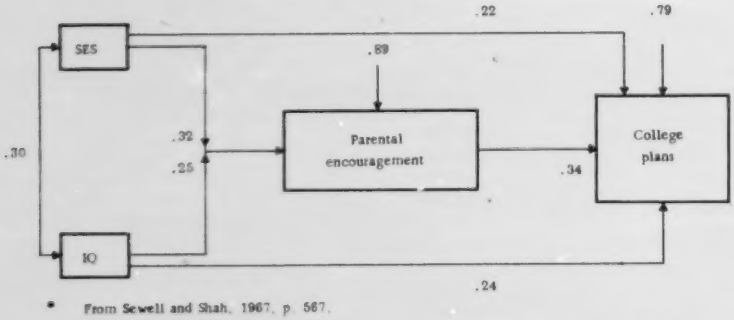
Instead Boudon develops the ideas of the "social position" theory somewhat further and tries by means of simulation with different qualitative and quantitative assumptions to show what would happen if choice were conceived of as dependent upon anticipated cost-benefit-utility functions that differed among social classes.

The "social position" theory seems to be related to the expectancy part of the compromise process according to Blau et al. and also to the "probable gain" model mentioned in Chapter III, page 19. The "value" theory may be used as a partial explanation of the preference part of the compromise. In all cases, however, it is necessary to look for more specific empirical information on how these processes operate. It is to be hoped that Boudon's theory will stimulate research in this direction.

Recent attempts to specify factors in the home situation that influence choice have to a large extent dealt with the encouragement by parents and other significant persons in the environment. These are the main variables in the research by Sewell and his group. Methodologically, they usually work in the path analysis tradition(1). A first approach to the problem is found in a study by Sewell and Shah (1967) of the college plans of 10,000 Wisconsin high school seniors. The relationships between college plans and antecedent variables are shown in Diagram 3.

Diagram 3

PATH MODEL SHOWING THE INFLUENCE OF SOCIO-ECONOMIC STATUS, MEASURED INTELLIGENCE, AND PERCEIVED PARENTAL ENCOURAGEMENT ON COLLEGE PLANS OF MALES*



* From Sewell and Shah, 1967, p. 567.

SES and IQ, which are inter-correlated, influence college plans of male students both directly and through the mediating variable of parental encouragement. The three antecedent variables together account for 37 per cent ($1-.79^2$) of the variance in college plans. Only 21 per cent ($1-.89^2$) of the variance in parental encouragement

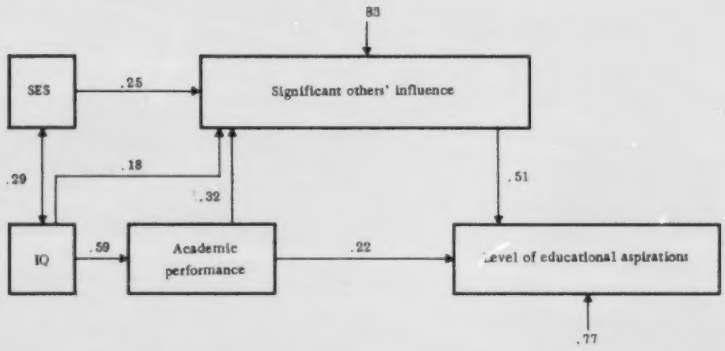
1) Statistically this approach is based on partial regressions (cf. Blalock, 1964, Keyfitz, 1974).

is accounted for by SES and IQ. The relationships are similar for female students but with somewhat stronger influence for SES than for IQ.

Sewell and his co-workers (1969, 1970, 1975) elaborated this model further and included adult educational and occupational attainment in the model. A subsection of a model published in 1970 is shown in Diagram 4.

Diagram 4

A SUBSECTION OF A PATH MODEL BY SEWELL, HALLER AND OHLENDORF (1970, p. 1023)



The strongest partial influence on level of educational aspirations (plans) comes from "significant others' influence", a composite variable that includes parental encouragement, teacher encouragement and friends' college plans. The influence from SES is mediated through this composite variable, and the influence from IQ through this and the academic performance in high school. 32 per cent of the variance in "significant others' influence" and 51 per cent in "level of educational aspirations" are accounted for by antecedent variables in the model.

A further elaboration of path models with encouragement as a central determinant of educational aspirations was made by Williams (1972) in a Canadian sample of 1,800 male and 1,800 female high school seniors. The following variables were included:

SES and IQ in grade 9,
academic performance in grades 9 and 11,
parents' and teachers' expectations in grades 10 and 12,
peers' aspirations in grades 10 and 12,
students' aspirations in grades 10 and 12.

By far the strongest predictor of students' aspirations in both grades was parents' aspirations in the same grade. As reported by the students themselves, there were no direct paths from SES or IQ

to students' aspirations. The antecedent variables together explained 81 per cent of the variance of males' aspirations in grade 12 and 77 per cent of that for females. Both estimates are remarkably high.

Rehberg and Westby (1967) introduced family size into their predictions of educational aspirations and showed that this had a negative influence which remained after controlling for father's education and occupation and for parental encouragement. Parental encouragement was the variable most strongly associated with aspirations both before and after control for the other variables. The SES variables also had an independent influence but since Rehberg and Westby were not able to control for IQ or academic performance direct comparisons with the studies referred to earlier are difficult.

Schwarzeller and Lyson (1974) compared influences on educational plans among American and Norwegian rural youth. Father's occupation, achievement level and parental interest were used as explanatory variables, and interesting differences were shown to exist between the United States and Norway and between boys and girls. When SES and achievement were controlled by means of grouping, parental interest was shown to be influential mainly for boys and, in Norway, only for boys from the lower social strata. Father's occupation had an independent influence on the plans for girls in both countries, and for low achievement boys in the United States and for boys with low parental interest in Norway. The differences between countries were interpreted in terms of differences in school systems (cf. below). The study shows that there may be complicated interactions between determinants which are not easy to observe in path analysis.

In another cross-cultural study Kandel and Lesser (1970) compared adolescents at lower-secondary level in the United States and Denmark. Mother's aspiration was used as an indicator of family background and its effect on the student's academic plans was compared to those of best friend's plans, school programme (academic vs. non-academic), the SES composition of the school and self-reported grades. The school-related effects will be taken up in later sections.

Average difference due to:	United States	Denmark
mother's academic plans	+38%	+47%
friend's academic plans	+16%	+15%

The effect of mother's plans is quite strong but here it is a combined result of all kinds of family influences and not an association after controlling for SES, IQ, etc., as in most of the studies reviewed earlier.

The examples given above are interesting to compare with Boudon's approach in that they stress the socio-psychological influences from parents and other significant persons in the environment rather than a cost-benefit interpretation of the choice. A methodological warning is appropriate, however. In all these studies (except Kandel and Lesser) the indicators of socio-psychological influences were based on information provided by the students themselves when they reported their educational aspirations. Part of the correlation may therefore be an effect of contamination between variables. According to Williams, however, this effect is not likely to be strong. In some of the more elaborate models SES has no direct link to educational aspirations but is related only via encouragement. This means that the cost-benefit anticipation, according to Boudon, would be made by parents and teachers rather than by the students themselves. In future research it is important that encouragement should be measured directly among parents, and not only through the students' perceptions, controlling for IQ, SES, academic achievement and similar antecedents.

Several studies have compared the relative predictiveness of different kinds of socio-cultural indicators. As an example Härnqvist and Grahm (1963, p. 97) studied the frequency of plans for the gymnasium in different combinations of SES and father's and mother's education. All three background variables had independent additive effects on the probability of choice.

Average difference due to:	Males	Females
high SES based on father's occupation	+17%	+13%
father's education beyond compulsory	+ 6%	+19%
mother's education beyond compulsory	+12%	+ 8%

There is a very interesting interaction between sex of student and sex of the parent who has education beyond compulsory: father's education is much more influential on the daughter's plans than on the son's. A slight difference in the opposite direction is found for mother's education. Belonging to the positive category in all three respects makes an increase in probability of 35 per cent for males and 40 per cent for females.

Krauss (1964) studied college aspirations among working class high school students and found that they were more frequent when the mother had a non-manual job, when she had higher education than the father and when a grandfather had a non-manual occupation - all examples of status discrepancies within the family. College attendance by other family members and high occupational status of the father within the working class also made college plans more likely. Krauss interpreted these findings as dependent on a reaction against downward mobility experienced in the parent generation. The results

also seem quite compatible with Boudon's theory of "social distance" as do the incremental effects found by Härnqvist and Grahm.

Marsden and Harvey (1971) compared father's education and family income as background variables in a Canadian study of the students in different post-secondary programmes. Father's education was found to be more important than income for the choice between university and non-university programmes and this was interpreted in terms of information and motivation. Compared with most European countries the differences look rather small but it should also be noted that the differences are within post-secondary education and do not record differential access to post-secondary education.

More differentiated and process-oriented measures of family background have been used in relation to early cognitive development and school attainment (cf. Husén, 1975, Chapter VI). Data of what actually happens in the home does not seem to have been used in studies focusing upon the development of educational plans and choices, at least not in the broader surveys that have been treated here where most of the information comes either from registers or from the students themselves. This is a serious lack of information when it comes to interpretation of differences and to operational recommendations.

Lastly, examples of changes in social handicap over time will be given from two Swedish studies. Härnqvist and Bengtsson (1972) compared the transition to university-preparatory upper-secondary education in three age cohorts, born in 1934, 1948 and 1953. Their results for SES and school marks in combination, condensed by means of effect measures, were the following:

Average difference due to:	1934	1948	1953
SES: high vs. medium	+41%	+23%	+16%
medium vs. low	+ 6%	+10%	+15%
Marks in elementary school:			
5 vs. 4	+23%	+29%	+14%
4 vs. 3	+18%	+33%	+29%

Source: Härnqvist & Bengtsson, op.cit., Table 8.

In the 1934 cohort the strongest effect was for high SES in contrast to medium SES. In the 1953 cohort the SES effect was weaker and more evenly divided among classes, but the difference between high and low was still large. In relation to school marks also the gap moved down the scale - from the contrast between the two highest levels (5 and 4) to that between intermediate and average (4 and 3). The lower levels were practically not represented.

In a survey concerning living conditions in society the Swedish National Bureau of Statistics studied the influence of parents'

education on education beyond compulsory in different age groups of respondents in 1974. Transformed to effect measures the results were as follows:

Average difference due to:	Age group		
	16-24	25-44	45-64
father's education beyond compulsory	+ 5%	+34%	+44%
mother's education beyond compulsory	+10%	+36%	+53%

Source: Survey concerning living conditions, manuscript table.

The effect was much stronger in the older groups than in the youngest one, where it is remarkably weak, probably due to the wide definition of post-compulsory education now in use in Sweden.

Peer group

Research into peer group influences on educational choices has centered around two main questions: Do the choices of friends and peers have a direct influence on the individual's choices or does a similarity in choice result from similarity in family background, school achievement and other common determinants? Does status in the peer group influence educational plans over and above determinants common to both?

From Alexander and Campbell (1964, Table 1) the following estimates of independent effects can be calculated:

Average difference in college plans due to:	
parents having high-school education or beyond	+34%
best friend plans to go to college	+37%
choice of best friend reciprocated	+ 6%

Here it seems that the best friend's plans have an influence of the same size as parents' education and that this influence increases when the sociometric choice is reciprocated. However, influences from such variables as IQ, academic performance and differences in encouragement between parents with similar education are not controlled for. On the other hand no contamination between variables exists as both respondents reported for themselves. (Cf. also Kandel and Lesser, op.cit.)

Two studies with path analysis controlling for variables of the type just mentioned produced different results. Sewell and Hauser (1975, p. 92 and Table 4-3) established a direct link between friends' plans and student's aspirations, similar in strength to that of parental encouragement. Williams (1972, pp. 122-123) found no significant partial correlation between peer aspirations and student's aspirations but peer aspirations were correlated with parental expectations on the same occasion. This correlation was

likely to be the effect of socio-economic segregation of residence areas and schools which resulted in peers having similar backgrounds, more or less favourable for college plans. In both studies peer aspirations were reported by the students themselves and the absence of a direct link is therefore remarkable and supports Williams' argument that there is a low degree of contamination between variables.

Duncan, Haller and Portes (1968) developed a path model where an inferred factor, "ambition", was used to account for that part of similarity between respondent and friend in educational and occupational aspirations which could not be explained by similarities in SES, IQ and parental expectations. "Ambition" correlated .21 between respondent and friend and this may be interpreted as an estimate of direct influence provided that friendships were not based on similarities in occupational and educational aspirations but on other social and personal characteristics. The analysis shows that it is very complicated to extricate direct influences from a general network of interdependence between social and personal characteristics.

In a panel study from freshman to senior year in high school, McDill and Coleman (1963) studied college plans in relation to membership in the "leading crowd" and academic achievement orientation. Those with positive college plans were more likely to get into the leading crowd and those without college plans more likely to formulate such plans if they belonged to the leading crowd. Such membership also protected college plans already made. Achievement orientation, on the other hand, had a positive association with college plans mainly outside the leading crowd. These somewhat paradoxical results were summarised by the authors: ".. college plans apparently derive from parent or peer socialisation for those in the leading crowd but more often derive from an interest in the scholastic content of college for those outside the leading crowd." (op.cit., p. 915). In the discussion the authors pointed out that for adolescents college promises liberation from adult control while school success is looked upon as a result of acquiescence and subordination to adults and therefore becomes less highly valued.

In another follow-up of the students from "The Adolescent Society" (Coleman, 1961), McDill and Coleman (1965) studied the relative influence of family status and status in the peer group on college plans in the freshman and the senior year. The effect of belonging to the higher status group in the two respects were the following:

Average difference in college plans due to:	Freshman year	Senior year
high education of father	+23%	+20%
high status in peer group	+10%	+26%

Thus influence of status in peer group increased during high school and even surpassed the influence of family background. In comparing these results with those by, for instance, Alexander and Campbell, it should be remembered that peer group influence has quite different meanings in the two cases: friend's choice of education as opposed to own status in peer group. There do not appear to be any studies that match these two influences against each other.

School environment

School characteristics are treated both here and in the next chapter on institutional determinants. Here those effects which derive from the composition of the student body and from the climate of the student's own school are studied. Structural characteristics of the educational system are taken up in Chapter VII.

The analytical problems are similar to those in the section on peer group. In order to be interpreted as school effects, differences should remain when SES, IQ, academic performance and similar are controlled for at the individual level. In most studies only a few of these controls have been possible. In some studies schools with different student composition are situated in very different communities and then it is difficult to know whether it is the school or the community climate that is operative (cf. Coleman, 1961, pp. 269-272). Research on school climates and educational choice can be seen as a branch of a broader ecological approach introduced by Rogoff (1961).

The cross-cultural study by Kandel and Lesser referred to earlier used the socio-economic composition of the student body to classify schools in higher and lower status groups. The effect of school status was compared to the effect of the student's own social background and parental aspirations reported by the mother.

Average difference in college plans due to:	United States	Denmark
own SES high	+16%	+20%
school SES high	+ 8%	+ 8%
mother's academic plans	+52%	+61%
school SES high	+ 3%	+ 3%

The contribution to variance from school SES was small when individual variables were controlled for.

Michael (1961) studied college plans in relation to high school climates based on the SES composition of the school. When the scholastic aptitude and SES of the individual students were held constant, differences remained between school climates. On average about 10% more college plans were observed in the "highest" than

in the "lowest" of five climates. Ability was relatively more influential in the "highest" (SES) climate and SES in the "lowest".

Boyle (1966) compared earlier studies of the effects of SES composition vs. individual SES and suggested that differences in results were due, among other things, to the size of the community where the schools were located. He developed an explanatory model where variations between schools in educational standards and peer-group influence were major determinants of between-school differences in college plans. The latter factor would be more likely to operate in larger communities, and Boyle also found in a Canadian sample that school effects existed only in the metropolitan areas.

Hallborg (1973, p. 116) compared students in high, medium and low SES classes (forms) in grade 8 in one Swedish city. The intentions to enter upper-secondary education were related to classroom SES and individual SES in the following way.

Average difference due to:	
own SES high	+17%
classroom SES: high vs. medium	+ 4%
medium vs. low	+ 6%

The results are rather similar to those of Kandel and Lesser for schools.

In recent years several attempts have been made to reconcile the conflicting findings of studies of school effects (Meyer, 1970; Nelson, 1972; Alexander & Eckland, 1975). It seems that two forces operate in opposite directions and sometimes cancel each other completely. College plans are positively affected by a high SES composition of the school. On the other hand college plans can be negatively affected by a high aptitude level among the students since they tend to judge themselves according to their relative standing in the school rather than to their absolute level. Such negative influences have been called the "frog pond" effect (Davis, 1966). Neither effect of the school context seems to be strong, however.

It has not been possible to find any studies that relate more process-oriented climate variables to educational choice, for instance, such as used by McDill, Meyers and Rigsby (1967) in relation to achievement, or such as the Learning Environment Inventory developed by Walberg and his co-workers (cf. Walberg and Ahlgren, 1970).

Individual determinants: Discussion

The area surveyed in the last two chapters is very unevenly covered by research. In some fields - the influence of intelligence, achievement and family background, for instance - studies are abundant

and it has been possible only to illustrate the types of results. In other fields, such as the influence of peer group and school environment, research is still at an early stage and rather few pertinent studies have been found.

The research on the choice of educational level has been successful insofar as it has managed to explain a large part of the variation among students by means of individual characteristics: mainly sex, IQ and educational achievement, in combination with measures of SES. Some variables such as the measure of school climate are promising, but in some cases it remains to be shown that they have an influence over and above antecedent individual variables. The interpretation of the relationships found is, however, still doubtful, as relatively few attempts have succeeded in getting behind the gross relationships by means of analytical and process-oriented variables. Because of the great complexity of the decision process and the substantial interdependence between most variables in the home-school environment this is a difficult task, and it seems that new approaches are needed. The present situation in research gives the impression that there is too much repetition of findings which have been established over and over again. Some repetition is, of course, desirable for keeping track of changes in the choice mechanisms, but the repetition should be deliberately planned and done in such a way as to ensure comparability over time. Unfortunately this is not often the case.

When it comes to the type or sector of education, research has been less successful in explaining choices, though there is one exception: sex of student is a very effective predictor of choice for a great number of sectors. Within each sex marks and interest profiles explain some variation but not to an extent comparable with the prediction of level.

The multi-variate approaches have added considerably to the study of choice. Comparisons between studies using different antecedent variables, however, show how sensitive these methods are to the choice and temporal ordering of variables. Furthermore, some of the results obtained so far remain questionable because of the risk of contamination of variables gathered from the same respondent at one time. When the analysis has been carried further than is normally done it has also appeared that complicated interactions exist, for instance between sex of student and family, peer or school influences. These are difficult to accommodate within the model of path analysis and such analyses therefore should be complemented with a closer scrutiny of the relationships within subsections of the models.

The research on individual determinants is important for the comprehension of educational choice. It tends, however, to stress

variables that have a strong general influence on educational career development: sex, IQ, academic performance, SES. From the planning point of view these factors work as stabilizers of individual demand - in some cases they are unwanted ones as has already been stated. They are not, however, very helpful for predicting changes in demand. Such changes are likely to start in marginal groups where the individual determinants work in different directions, for instance low academic performance and high SES or vice versa. The more general studies referred to make it possible to identify some marginal groups, which it would be fruitful to study more closely and perhaps to follow regularly in order to monitor trends.

Chapter VII

INSTITUTIONAL DETERMINANTS OF EDUCATIONAL CHOICE: EDUCATIONAL SYSTEM

Institutional determinants will be taken up in two chapters under four main headings: educational system, demographic factors, occupations and economy, and social and cultural conditions. In contrast to the previous chapters which were based on a large volume of empirical research these chapters will contain more theoretical discussion and rather few empirical illustrations. It seems that direct studies of educational choice in relation to institutional or structural characteristics are scarce but admittedly this impression may be because appropriate references to the literature in the field have not been located.

The student's achievement in school and the characteristics of his school environment that emanate from his background were dealt with in Chapters V and VI. Here the discussion will centre around what Dahllöf (1971) calls frame factors in the educational situation; mainly organisation, localisation and personnel, but some variations outside this concept are also included. Some of these factors operate in the school to which the student belongs when he makes his plans for the next stage. Other conditions characterise the stage which he is about to enter. This distinction between antecedent and anticipated educational conditions is used for the organisation of the chapter. In addition, a section is devoted to expected structural changes in the system and their impact upon demand.

The effects of variations in conditions may be both general and differential. General in the sense that they bring about, for instance, an overall increase in demand for education at the next level or a shift of emphasis from one sector to another. Such general effects may be combined with differential effects in the sense that different subgroups (according to age, sex, SES, etc.) change their demand in varying degrees. Such differential or interaction effects may even counterbalance each other and result in no overall change. When studying effects of variations in conditions it is necessary to look not only for general but also for differential effects. This statement is valid also for the structural characteristics studied in Chapter VIII.

1. CONDITIONS ANTECEDENT TO CHOICE

Among the wide diversity of antecedent educational conditions that may influence demand four aspects will be discussed here, and where possible empirical illustrations will be given. The four are:

- curriculum emphasis
- terminal vs. transfer programmes
- differentiation system
- guidance organisation

Curriculum emphasis

Differences in subject matter taught in school influence the achievement and interests of students and as a result their demand for education at the next higher stage. Such arguments are often to be found behind curriculum reforms. Stressing mathematics and sciences at the secondary level is expected to result in better preparation and more choices for science and technology at higher levels. Introducing practical subjects in school is expected to have positive effects on vocational education. Many such examples could be given, but it is difficult to find any systematic evaluations of such changes in the curriculum. Furthermore, general changes of emphasis may have differential rather than general effects since they are likely to interact with individual characteristics of the students - strengthen interest and achievement where they already exist but have a discouraging effect on others.

Adjusting the curriculum and instruction to the abilities and interests of the students in a given area is likely to be more effective than general stress on a subject matter area. Much work in this direction has been done for mathematics and sciences but evaluation has been mainly in terms of achievement and not of educational choice. Even in achievement desired effects are usually difficult to bring about.

Terminal vs. transfer programmes

A recent OECD report (1977) on selection and certification makes the important distinction between terminal and transfer programmes. Terminal programmes prepare for entrance into an occupation or specialised vocational training. Transfer programmes prepare for further education at the next higher level. Traditionally, these programmes have been provided on separate tracks within the educational system, at least at secondary level. The transfer programmes have usually been more prestigious and have recruited their students from the higher social strata.

With increasing democratisation of the school systems the two functions tend to be combined in the same comprehensive programme. The Swedish upper-secondary school to be described in Chapter IX may be regarded as an example of this trend. This integration of tracks may, however, lead to what was called the transfer/terminal dilemma. The risk is that the transfer function comes to dominate the terminal function and this gives rise to unintended negative consequences. The students not using the transfer possibilities may regard this as a personal failure. Employers who used to recruit from the terminal tracks may become suspicious about the comprehensive programme and consider those who leave at an early stage as less capable students and at the same time less well prepared for direct entry into an occupation than their counterparts in the traditional terminal programme. Such a situation can be expected to increase the number of students making use of the transfer possibilities and thus influence individual demand.

Differentiation system

This term is used here to cover a great variety of differences among students in educational programmes or grouping for instruction or a combination of both. It includes variations in grouping within a common curriculum according to ability or achievement in the form of streaming (over all subjects) or setting (in each subject per se). It also covers the original part of a comprehensive programme, i.e. choice between elective subjects and academic and non-academic courses with or without consequences for the grouping of students in common parts of the curriculum. It finally includes organisational separation between branches, lines or even schools at the same stage.

Differentiation in all its forms means a gradual delimitation of the range within which the individual acquires "technical qualifications" (cf. Blau et al.) for further choices of education and occupation. The characteristics of the system are therefore very important for individual demand and they have been intensively discussed in relation to comprehensive systems and the goals of educational and social equality.

The following characteristics of differentiation are considered to be of special importance:

- Age or grade when differentiation takes place; the earlier it is the more likely it is that family background will influence the decision whether it is taken by the school or by the parents.
- Scope of differentiation; the limitation of range for further choice is greater and more difficult to compensate for when differentiation covers the whole curriculum rather than individual subjects.

- Organisational separation; the effects of differentiation are less definitive when the alternatives are provided within the same school.
- Decision-making; by school one-sidedly (placement), by school after application (selection), by parents and students (election).
- Criteria of placement or selection; ability vs. achievement vs. interests; general level vs. profiles. This very complex discussion has been touched on in Chapter V.
- Preparation through guidance; when the student and his parents can influence the decision, guidance can contribute to equalising information and advice (cf. pp. 29 and 60).

In real school systems these characteristics are combined in different ways and it is difficult to evaluate the effects of separate characteristics for at least two reasons. The characteristics are likely to interact with each other, i.e. have different effects in different mixes, and each mix has a unique relation to the broader educational and societal context in which the differentiation system works. In a few studies, such combinations have been compared with other circumstances under control.

It is possible to envisage two methodological approaches to such comparisons. One is a simultaneous, or nearly simultaneous, comparison within a country where two systems exist side by side, in similar areas, without the possibility of self-selection between systems. Two Swedish investigations will be referred to as examples of this design. The other approach is the study of discontinuities in time series in relation to change of system (cf. Campbell and Stanley, 1966, design No. 7). Here it is important to look not only for overall trends but also for changes in the relationships between choice and individual determinants. In principle, this could be done on the basis of official educational statistics but too little systematic use has been made of this source, and differential effects can rarely be studied through the data available.

Now to the empirical illustrations. In a ten per cent sample of the 1948 age cohort, first studied in 1961 and followed-up at later occasions, Härnqvist (1966) investigated the educational plans of pupils in grade 6. About 3,000 of the pupils belonged to an experimental version of the comprehensive school and were required to make academic or non-academic choices for grade 7. About 6,000 remained in the traditional parallel system with a possibility of transition to academic secondary schools after grade 6. A comparison could thus be made between academic plans in a comprehensive and in a traditional separated system. The pupils responded to two choice situations: their plans for grade 7 and if they planned to take the "Studentexamen" (qualifying for university entrance) some six years

later. The effects of the differentiation system and SES are reported below with mark level controlled through grouping.

Average difference due to:	Academic plans for grade 7	Plans for "Studentexamen"
comprehensive vs. separated	+14%	+15%
SES: high vs. medium	+10%	+19%
medium vs. low	+11%	+13%

(Condensed from Härnqvist, 1966, Tables 15 and 16)

Academic choices were more frequent in the comprehensive system and the difference in overall frequency was about as large as between two consecutive steps in a three-step SES categorisation where "low" means working class. A differential effect in relation to SES was expected and there were some indications in the original analysis of smaller SES differences in the comprehensive school. When the present effect measure was calculated these differences between systems disappeared and, on an average, one step in the SES scale had the same effect in both systems.

Reuterberg (1968) followed up the same students and studied those who belonged to academic paths in grade 7 and those who had entered the gymnasium leading to "studentexamen". When mark level and SES were controlled the effects of school system were as follows. (In order to calculate SES effects in a similar way as above it would have been necessary to go back to raw data and make a new combination of SES categories.)

Average difference due to:	Academic choice in grade 7	Entered the gymnasium(1)
comprehensive vs. separated	+26%	+6%

1) Followed up for boys only.

(Condensed from Reuterberg, 1968, Appendices 6 and 8)

The effects were still in favour of the comprehensive school but differed considerably from those for plans reported previously. The larger difference here for grade 7 is probably a result of the selection which, in the traditional academic school, occurs between plans and entry at lower secondary level. Before entering the gymnasium both groups had to go through another selection procedure which to some extent, but not quite, restored equality between systems, and the remaining 6% effect is perhaps the most interesting finding among all, since it is likely to be an estimate of the net recruitment effect of the comprehensive, as opposed to the separated system, at lower secondary level.

The study by Kandel and Lesser (1970) referred to in Chapter VI has also some bearing on differentiation since it uses academic, as opposed to general, school programmes as one of its variables. Mother's plans for the student and school programmes were reported to have the following effects on college plans at junior secondary level (op.cit., Table 5:B).

Average difference due to:	United States	Denmark
mother's academic plans	+39%	+56%
academic school programme	+42%	+18%

A closer look at the preceding data (op.cit., Table 7) shows that there exists a considerable interaction which makes the differences in overall effects rather misleading. The choice process is, therefore, better described in the following way:

	Secondary programme		Post-secondary plans	
United States	Academic	34%	College	95%
			Non-college	5%
	General	66%	College	41%
			Non-college	59%
Denmark	Academic	67%	College	48%
			Non-college	52%
	General	33%	College	10%
			Non-college	90%

In the United States the real choice situation exists within the more frequent general programme, and there parental aspirations play a considerable part (effect of mother's plans in this sub-group 41 per cent). In Denmark the real choice situation exists in the academic programme, which is twice as frequent as in the United States, and there parental aspirations exert a very strong influence (effect 64 per cent). If one assumes that the mother's plans were already fixed before the first choice situation, this choice was much more influenced by parental aspirations in the United States (effect 36 per cent) than in Denmark (15 per cent). The influence of earlier achievement on the choice is not controlled but, to some extent, it is likely to be contaminated with mother's plans.

Guidance organisation

Some evidence has already been reported to the effect that organised guidance can contribute to equalising conditions for rational choice (cf. pp. 29-30). A study by Rehberg and Hotchkiss (1972) questions this conclusion. A path analysis in a high school sample showed that Counseillors advice, as perceived by the students themselves, made a independent contribution to school plans (path

coefficients .15 for males and .25 for females). This meant, on an average, a fairly small increase in the student's educational expectations and was of much less importance than plans already made in the freshman year. The counsellor's contribution was regarded as marginal and open to discussion from a cost-benefit point of view. However, it is not only the overall effect upon choice that should be considered but also - and primarily - the differential effects in the form of different relationships between choice and individual characteristics in a guidance situation as compared with a situation without guidance. Such interactions have been studied by Coleman et al. (1966, pp. 531-532) who were able to show that those seeing a counsellor more often had a higher correlation between ability and college plans.

An example from a related problem area indicates what strong social mechanisms the guidance organisation may have to take into account. Granovetter (1974), in a study of job changes among professional, technical and managerial workers, found that personal contacts was the most frequent method of finding a new job. In general, satisfaction with the new job was higher when it was found through personal contacts rather than formal means or direct application. The study clearly showed the importance of belonging to a social network where labour-market information is transmitted as a byproduct of other social processes. Similar processes may act also in the educational choice situation and then they are likely to be one of the mechanisms behind the persisting effects of family background. Through the social and occupational networks of their parents higher-class students gain access to much more diversified and accurate information than working-class students in the choice situation. The aggregate effects of such mechanisms are well stated by Granovetter:

> Indeed, one of the main results of my analysis is that routine social mechanisms which are quite rational at the micro-level have the macro-level result of institutionalizing social inequality, a result not necessarily intended by any particular actor. (op.cit., p.100)

2. CONDITIONS ANTICIPATED IN THE CHOICE SITUATION

To treat future conditions as causal in relation to choice may seem awkward, but it is, in fact, the individual's anticipations of future conditions which become antecedent to choice. In some cases, the temporal relations can also be somewhat confused, as in the case of differentiation systems (cf. above), where the characteristics of the same choice situation operate as future conditions at some

stages in a choice sequence and as antecedents in others. In this section the discussion will be limited to three aspects, namely:

- admission and selection
- geographic availability
- study finance.

Admission and selection

Most educational programmes beyond the compulsory level have some sort of minimum requirements for entry. These are usually expressed in terms of earlier educational attainment but experience in the specific field and general vocational experience may also be required in addition to or, in some cases, even as a substitute for formal education. When the number of places available is restricted (numerus clausus) a selection is made among the applicants and this may be based on criteria similar to the minimum requirements for admission but they are often supplemented with tests and interviews. Both admission and selection procedures vary in their degree of formality - from strict scoring of merits to a clinical type of global assessment (cf. Härnqvist, 1974).

Relaxation of admission requirements is likely to have an influence on demand. An example of this in Sweden is the recruitment of adults without the usual upper-secondary preparation, to higher education (cf. Chapter IX). This modification of admission rules has contributed to a very considerable change in the student composition of the humanities and social science faculties. However, not all such changes in admission rules are automatically followed by the desired effects. In order to be effective they frequently have to be backed up by increased attractiveness of the programme, appropriate means for financing study and other such positive measures.

Even where measures such as these are taken the recruitment effect will not necessarily appear. Adult education has experienced many disappointments because of psychological and environmental obstacles to participation (cf. Rubenson, 1975, Chapter VIII). Persons who have a weak educational background and who are therefore the target group of a change in rules may resist because they lack confidence in their capacity. They may also perceive environmental conditions as obstacles more often than persons who have greater confidence in their psychological resources. Active recruitment campaigns seem to have some effect. However, the abolition of unnecessary formal requirements remains a pre-condition for increasing demand from new groups of potential applicants.

An educational system with selection mechanisms to some programmes and free entry (provided some minimum requirements are

filled) to others is likely to affect the distribution of individual demand. The restriction may add to the prestige of the numerus clausus institutions and make them more attractive to students who expect to succeed in the competition for places; in some cases students may have already secured entry to a profession. Students who are attracted but expect to be borderline cases in such a competition are likely to try by all possible means if they come from a high SES background, otherwise they give up.

The type of criteria used for selection influences the expectations of students and probably more so when the selection procedure is formalised and thus highly predictable. An example: in Sweden selection to higher education is formal and centralised. Merit rating is based mainly on marks from upper-secondary education. This marking is "norm-referenced" in relation to the students in a particular branch, i.e. all branches are expected to come out with roughly the same distribution of marks. However, the mark level from comprehensive school differs between the entrants to different branches (cf. Chapter IX), which means that for a student at a given entry level his expectations for final marks vary as among different branches of study. If he hopes to get into a selective institution at university level, tactical speculations may influence his choice of study at upper-secondary level, and the branch that is most likely to lose him is that of natural sciences, where competition for marks is strongest. Recently an adjustment of the marking scale has been devised for natural sciences in order to compensate for the lowering effect of the marking system.

Furthermore, at the moment of selection, marks are added up without weighting. This means that subjects which take up a large part of the curriculum in a given branch, for instance maths and sciences in natural sciences, count the same as the "easier" subjects. This too can encourage tactical choices, and even here the natural sciences are expected to be the loser.

Another characteristic of the Swedish selection system is the use of quotas based on the proportion of applicants from different categories specified according to previous education. The reasons for quotas are to avoid a successive escalation in the level of general preparation brought about through competition, and also to secure some places for those who meet only the minimum formal requirements. Quotas can also be used to ensure places for males in some female dominated educations and vice versa, or for those without the usual preparation whose merits are difficult to score in a formal way. Quotas may lead to tactical choices at earlier stages - choice of an academically less demanding secondary programme where the expectation of good marks is higher, thus affording a better chance to compete.

The examples mentioned from the Swedish selection system show that characteristics of the system may have backwash effects on the choices made at earlier stages in the educational system. These particular effects have to be weighed against other possible backwash effects of selection. At present the design of the selection system is to a large extent a "clinical" exercise that has to be done again from time to time on the basis of uncertain information about causes and effects.

Geographic availability

The expansion of resources for non-compulsory education in the 50s and 60s was to a great extent brought about through the establishment of new schools and institutions in areas where distance had been an obstacle to further education. Examples of this trend are the American community colleges, the Norwegian regional colleges and the Swedish university branches.

The recruitment effect of the Swedish university branches, and geographical distance as a determinant of demand, have been studied in detail by Holm and Häggström (1972) in an investigation for the U68 commission. One estimate of the distance effect was the difference in frequency of participation in higher education between municipalities within and outside the area surrounding the towns where universities and branches were located.

Academic year	Frequency of participation		
	within 50 km.	outside 50 km.	Difference
1962/63	12%	6%	6%
1966/67	22%	13%	9%
1969/70	27%	17%	10%

Source: Holm and Häggström, op.cit. p. 61.

These differences between neighbourhood and distant municipalities were also due to some extent to size and social composition of the municipality, and these were correlated with distance. When these and some other variables were combined in a multiple regression equation it was estimated that a doubling of the distance from the home to an institution of higher education meant a decrease in likelihood of participation by 30 per cent. About a third of the increase in enrolments in non-restricted institutions during the 60s could be accounted for by decreased distances from higher education institutions and increased variety in their options (op.cit., Chapter VI).

The percentage choosing to enter another institution than the one within 50 km. was greater (op.cit., p. 86):

- for higher than for lower SES students,
- for unmarried than for married students, especially among women,
- for students above 25 years of age at entry,
- for students without the usual formal competence.

Thus students who were "marginal choosers" in other respects seemed to be more influenced by physical distance. The effect of physical distance was similar to that of social distance (cf. page 43) and nearness in one respect could compensate for distance in another.

In the choice between local and more distant institutions it is not only the distance and variety of programmes which are likely to be influential but also the reputation of the institutions. This was studied by Watts (1972, Chapter IV) for British institutions of university level. There were differences in the sixth-formers' perceptions of the different institutions with Oxford and Cambridge at the top according to reputation and these perceptions had some bearing on their choice, although the mechanisms turned out to be rather complex.

Study finance

The expansion of institutional resources for non-compulsory education has been accompanied by the setting up or changing of various systems for financial aid to students. These systems vary greatly and here only a few distinctions will be mentioned in order to give an idea of the complexity of the area.

- Stipends or loans or combinations of both.
- All students who apply at a certain level, or a restricted number.
- Selection based on earlier attainment or economic background or some combination of both.
- Size of allowance, absolute amount or amount relative to earnings of employees of the same age.
- Fixed or differentiated size of allowance: according to economic background, age, field of study.
- Cash allowance or free boarding and tuition.
- Available already at secondary school level or only in higher education.

All these characteristics and many more are expected to have an influence on demand, but what do we really know about their importance? It has not been possible to search specifically for empirical evaluations of systems for study finance but available evidence in this field is rather indirect and only rarely based on systematic study. The field is a very complicated one from a methodological point of view, not least because changes in study finance often

coincide in time with other major changes in the educational system and this makes it almost impossible to study effects by using overall educational statistics.

Campbell and Stanley (1966, Design 16) have proposed an ingenious application of regression analysis for studying effects of awards. A pre-condition for its use, however, is that selection is strictly based on an index which is available to all applicants and which provides all the information likely to influence the decision. Such indices are seldom available as most decisions are based on less formal weighing of merits, especially in borderline cases. In spite of such difficulties the field is not impossible to approach with empirical methods and it seems certain that the marginal rate of return of such studies would now be much higher than repeated investigations of some of the individual determinants of demand. There follow just a few examples of what has been found.

Williams (1974) studied the decrease, in relation to projections, of the number of students qualifying for higher education in Britain. Among the explanatory factors considered were the maintenance grants paid by public authorities. During the 60s this system was extended to cover almost 100 per cent of the students and no change in this proportion could explain the slackening trend. A comparison with prices and earnings of young people in the labour market, however, showed the grants in an unfavourable light. The "index of purchasing power of student grants compared with wages of their contemporaries" fell from 100 in 1962-63 to about 60 in 1972-73 and thereafter. This decrease had to be compensated for by private means and naturally this was likely to have influenced individual demand.

Another British study by Piachaud (1975) indicated that with the present grant system the extra cost to parents of their child continuing education as compared with starting work differed considerably between the 15-17 and 18-20 age groups. According to his estimates, it was much more expensive for low and medium income parents to keep their child in upper secondary education than in university, and for high income parents the difference was small. This held for both absolute cost and for extra cost in proportion to net income. For the low income group this proportion was as high as 16 per cent in the 15-17 age group. Upper secondary education thus seemed to be a critical stage in the development of educational inequality.

Freeman (1971, p. 107) investigated the effects of stipends on the supply of manpower at the doctoral level. Stipend support of graduate students was expected to affect the labour market in three ways:

1. By making study in supported fields highly remunerative, stipends will influence career decisions.
2. Stipends will induce persons to undertake full-time study and so may reduce the time spent acquiring a Ph.D.
3. By increasing the supply of specialists, stipends will lower the prevailing salary.

In general expectations 1 and 2 were supported by empirical data on the growth of Ph.D. frequency in different fields during a five-year period, that is in the short run. In the long run, the stipend effect on supply was reduced via lowered salaries in accordance with expectation 3.

3. PREDICTED STRUCTURAL CHANGES IN EDUCATION

What has been written so far refers to existing educational systems of a predominantly formal nature, recruiting their students among youth passing directly from one stage of the formal system to another. At present there are changes under way that tend to make the pattern more flexible in various respects. One example of this has been mentioned in the section on admission rules to higher education: occupational experience as a substitute for upper-secondary preparation. The British Open University is another example.

Many of the characteristics of these structural changes can be subsumed in the concept of recurrent education which has been defined in the following way (OECD, 1973, p. 24):

> Recurrent education is a comprehensive educational strategy for all post-compulsory or post-basic education, the essential characteristic of which is the distribution of education over the total life-span of the individual in a recurring way, i.e. in alternation with other activities, principally with work, but also with leisure and retirement.

Such a comprehensive strategy implies changes in almost all respects. Primarily it makes education intermittent and less dependent on age. But if education is to be suitable for adults with life and working experience it must also be:

- much more flexible than youth education in curriculum, methods of teaching and distribution,
- much easier to combine with other activities and responsibilities than institutionalised full-time education,
- much less dependent on entry and graduation requirements of a formal kind.

Effective systems must be built up for study finance and educational leave.

One, or even many, large scale reforms cannot bring about changes of that scope. Rather, they can define directions against which the continuous planning process can be monitored. Even moderate steps in these directions should have a strong impact upon individual demand for education - most likely a decrease in formal youth education and an increase in informal and adult education. The interesting thing, however, is not only such general effects but also the differential effects in relation to individual characteristics of the potential student population.

How, for instance, will such changes influence the inequalities as to sex, social and geographic background that are now almost universal in post-secondary education? Will the less educated groups use the "second chance" that the new system opens up? Will the class bias in youth education continue to diminish or will it be further strengthened and students from lower strata tend to postpone their continuation with the risk of never returning to education? In view of the difficulties experienced in recruiting the least educated groups into adult education such apprehensions are not absolutely groundless: opening up new possibilities is not a sufficient measure for achieving equality.

This report which is based mainly on research and experience from present educational systems cannot be expected to be of help in a radically new situation except that it may provide a frame of reference and a list of factors that may be important in a system with recurrent education.

Chapter VIII

INSTITUTIONAL DETERMINANTS OF EDUCATIONAL CHOICE: SOCIETY OUTSIDE THE EDUCATIONAL SYSTEM

1. DEMOGRAPHIC FACTORS

Comparisons of educational participation between countries, demographic subgroups, years, etc., are most frequently based on percentages in relation to age cohorts or subpopulations eligible for the education in question. Such indicators are well suited to analytic purposes. When it comes to actual planning and provision of resources, however, it is the absolute numbers of applicants or students, and their variation over time, that are the most interesting indicators of demand. Changes in the size of population and its distribution according to age, sex, social, geographic and educational background then become key variables in planning.

An idea of the rate of change in populations of eligible age and its importance for demand can be obtained from data in the OECD survey (OECD, 1970 a-b) and its follow-up (Cerych, 1975) referred to in Chapter I. In Table 10 proportions between the final and the initial year in the two ten-year periods are reported both for the number of new university entrants and for the size of populations of eligible age in eight countries.

Table 10

NEW ENTRANTS TO UNIVERSITY-LEVEL EDUCATION AND POPULATION OF ELIGIBLE AGE IN TWO TEN-YEAR PERIODS

(Final numbers are in proportion to initial numbers)

	New entrants		Eligible age population	
	1955/56-1964/65	1965/66-1974/75	1955-1965	1965-1975(1)
Denmark	2.86	1.79	1.34	0.96
France	2.74	1.23	1.16	1.16
Germany	1.53	2.11	1.12	0.90
Italy	2.12	2.21	0.99	1.01
Netherlands	2.48	1.43	1.30	1.10
Sweden	3.21	1.34	1.43	0.91
United Kingdom	1.66	1.44(2)	1.26	0.96
United States	1.73	1.08	1.40	1.24
Average	2.29	1.57	1.25	1.04

1) According to forecast.
2) Final year 1973/74.

In the first ten-year period the number of new entrants increased on average by about 130 per cent against a 25 per cent increase in the population of eligible age. At the between-country level there was a positive relationship between population increase and entry increase, with Sweden highest and Germany lowest in both respects. In the second ten-year period the number of new entrants increased by about 55 per cent as compared with about 5 per cent population growth. At the between-country level for this period there was a negative relationship between the two measures, with entry doubling in Germany and Italy in spite of decreasing or constant population and remaining constant in the United States in spite of increasing population.

The relationship of the two indicators at the between-country level is thus rather complicated. Within a country, however, population changes are likely to be positively related to demand and it is therefore interesting to see the size of the variation of eligible age populations between years. In the OECD survey (OECD, 1970, Table A-13) size of population of eligible age is available for every fifth year. In the 1955-65 period the largest population (out of three observations) was on the average about 30 per cent larger than the smallest. Extreme cases were Sweden with 43 per cent and Italy with 2 per cent. In the 1965-1975 period the largest population was on the average about 15 per cent larger than the smallest (of three). Here the United States with 26 per cent and Italy and the United Kingdom with 5 per cent were the extremes. Thus, planning on the national level may have to cope with quite considerable changes within a ten-year period and not necessarily in one direction only.

These examples refer to the age cohorts, somewhat different in different countries, from which higher education has traditionally recruited. Since under normal circumstances the size of an age cohort remains rather stable over the age span during which individuals usually enter non-compulsory education, the estimates of variation are likely to hold true for other definitions of eligible age in populations of youth and young adults.

Most educational systems are hierarchically constructed and entry to a higher stage normally requires successful completion of the preceding one. Therefore, age is not in most cases a sufficient criterion for defining eligibility. For practical purposes it must be complemented with information on education completed, geographic area, etc. These further criteria may result in increasing the variation between years.

In connection with demographic factors it is appropriate to mention a model where the change from year to year in the attendance of non-compulsory education is entirely dependent upon the proportion attending at a certain stage in one year and the proportion then

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eligible but not attending (Stone, 1965). Such a model leads to small increases from year to year in the proportion attending when this proportion is still low, then rapid increases at moderate levels, and finally a decreasing rate at high levels where the proportion still to be reached is small. This process is parallel to the spread of an epidemic where in the beginning few are infected and so liable to infect others and in the end few remain to catch the infection.

This, naturally, is an over-simplification of the mechanism behind individual demand for education. As Williams (1974) points out, it does not explain what causes the beginning and the end of the process nor the proportions where it begins to level out which differ very much between countries. Still it is an interesting thought that the mere proportion attending at a certain stage may influence the rate of change in demand. This is also a plausible assumption according to sociological theories on the diffusion of information and reference group behaviour. Observed trends in some countries also resemble such S-shaped curves of development which is a warning against linear extrapolations of trends.

2. OCCUPATION AND ECONOMY

From Chapter IV it is evident that occupational motives play a major role in the students' own perceptions of their choice of education beyond compulsory level. To a large extent, it is an interest in the activities associated with a certain occupation that is perceived as the major influence, but expected earnings, employment chances and job security are also reported by the students as important factors in their choice. Furthermore, changes in aggregated individual demand for education are very often explained by changes in employment possibilities and economic rewards both by the students themselves and in the public discussion of what causes a certain trend.

This section will turn to the economics of education for theories and empirical analyses of the influence of economic factors on individual demand for education. It must be remembered that it is written by an outsider to the field, so that it is neither a formal treatment nor a comprehensive one, but just an attempt to select information that seems to be relevant to the present problem.

The section is divided into three parts. The first tries to describe how economic rewards in occupations are considered to influence individual educational decisions. The second part studies the way in which changes in these conditions bring about changes in aggregated individual demand. The third part deals with various factors that are likely to attenuate the relationships between economic conditions and choice.

a) Private rates of return to education

From a private economic point of view a rational decision to continue in a certain kind of education should be based on:

- the direct cost for the education which may, however, be subsidised through stipends and free tuition;
- the opportunity costs of the education, i.e. earnings foregone during the education which in case of unemployment may be negligible;
- the prospects of employment upon graduation;
- the expected increment in earnings due to the education chosen.

In the original theory of human capital the economic gain an individual derives from an investment in education was seen as an effect of his increased competence which was reflected in the wages the market was willing to pay. In later years, this assumption was challenged by economists who stress the sorting or filtering or signalling function of education: wage differentials between differently educated manpower reflect the employers' willingness to pay for a pre-selection (screening) performed by the educational system, and do not depend on increments in production capacity through education. Most likely both these mechanisms influence private rates of return.

Opportunity costs, employment prospects and increments in earnings are dependent on general economic trends and on the development of supply and demand in the labour market of persons with a particular education or a substitute one. The individual, however, cannot base his decision on the exact conditions in these respects during and after his period of education because these are unknown at that stage. At the same time his decision, when aggregated with those of his peers, influences the future supply on the market. In making the decision he must rely on predictions based on information which is incomplete, may be obsolete and even biased if he has to collect it himself. The extent and nature of these distortions vary with the individual's background. Furthermore, the importance attached to economic aspects of the choice is also likely to vary between individuals even though a majority perceive their choice as influenced by occupational and economic conditions.

Against this background it may seem that it would be difficult to find more than very weak relationships between economic factors and choice. Some circumstances, however, work in another direction.

- The variations in rewards between different occupations, and with that the educations that lead to them, may be so visible and stable that most people have a fairly correct perception of the situation.

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- Even if predictions turn out to be incorrect the decisions founded on them may correlate with economic factors in the ex ante situation as long as most people adjust to them in a similar way.
- When individual decisions during different periods are aggregated for a population, individual irregularities cancel each other out, and small shifts in individual probabilities may result in strong trends.

Since 1960 a large volume of empirical research has been devoted to estimating private internal rates of return to formal education for different stages, periods and countries. The present state of the field was summarised by Nollen (1975).

> "Private rates of return to formal education usually fall in the range of 12 to 16 per cent. This exceeds both market lending rates and the return to physical capital." (op.cit., p. 53).

> "Both private and social rates of return to formal education usually decline as successively higher levels of schooling beyond the middle elementary years are attained. For example, the rate of return to a college education marginal to a high school education is less than the rate of return to a high school education marginal to an eighth-grade education. ... Rates of return to graduate education in general are also low compared to lesser educational attainments." (op.cit., p. 55).

Cost-benefit analyses have also been made for specific professional educations. An example of this may be taken from a study for the Swedish U68 commission by Magnusson and Tychsen (1972). They investigated the incomes of fourteen professional groups at various stages of the life cycle. The results were used for the estimation of two effects:

- the production effect, which is a measure of the pay-off for society of the particular education,
- the income effect which is a measure of the pay-off for the individual.

It is the latter measure that corresponds to the model of page 72 and is of particular interest in this connection. Five professional educations were shown to be profitable from this point of view: business administration, civil engineering, dentistry, law, and above all medicine. This list is probably very similar to what secondary school leavers in general believe to be the most profitable professional educations.

The rate of return calculations do not, however, show in which ways cost-benefit information influences the individual's decisions

about education and changes in aggregated demand. According to Nollen (op.cit., p. 69)

> ... there are ample measures of the ex post economic return to schooling, but there has been no work on the ex ante effect which variations in the economic return to schooling have on the education decisions of individuals and hence the supply of educated labour in the future. Similarly, there is little knowledge of the demand response of employers to changes in the wages of variously educated workers.

A similar view is taken by Blaug (1976) who in a critical survey of human capital theory states that:

> ...even now the demand for education remains a curiously neglected subject in the vast empirical literature exemplifying the human-capital approach. (op.cit., p. 831)

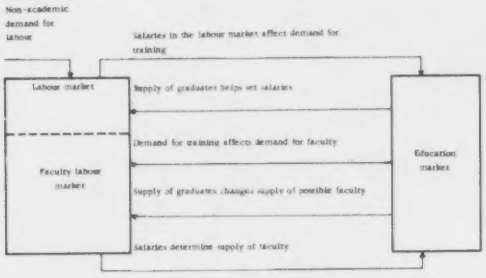
b) Supply-demand interactions

This leads to the next topic: how changes in the factors determining private rate of return bring about changes in aggregated individual demand. The research situation in this respect does not seem to be quite as desperate as Nollen maintained and he admitted this when referring to some recent studies of the functioning of labour markets for college-trained manpower. Especially relevant in this context is a book by Freeman (1971).

Freeman developed a model of the labour and education markets, the main features of which are illustrated in Diagram 5 (from Freeman, p. 28).

Diagram 5

LINKAGES BETWEEN THE EDUCATION AND LABOUR MARKETS


Non-academic demand for labour
Salaries in the labour market affect demand for training
Labour market
Supply of graduates helps set salaries
Demand for training affects demand for faculty
Faculty labour market
Education market
Supply of graduates changes supply of possible faculty
Salaries determine supply of faculty

Here the upper circuit linking the non-academic labour market with education will be exemplified.

Freeman described the conditions for equilibrium between the number of new entrants to an occupation and the outflow from the occupation, as well as two adjustment paths to equilibrium generated by the model:

"a cobweb path, in which variables oscillate towards equilibrium, and an incomplete adjustment path, in which they approach but fail to attain equilibrium for several periods of time." (op.cit., p. 22)

The model was applied to the market for some college-level occupations in the United States after World War II. The cobweb adjustment was shown to be valid for engineering, accounting and business administration. For instance, the enrolment of engineering freshmen in a given year was quite responsive to the number of engineering graduates in the same year. With a large graduating class the number of freshmen decreased and vice versa. Other markets were characterised by incomplete adjustment during the period of study, for example, doctorate specialities, chemistry and mathematics. In general, salary changes contributed to speeding up the adjustment process.

Freeman tried to check the basic assumptions in his econometric calculations against survey data from college students about their career choice. Unfortunately, the response rate was low (25 per cent) and results must, therefore, be taken with reservation. The variables, however, are of great interest. They were, among others, the time when the students made their career selection, the definitiveness of their choice, perceived characteristics of chosen and alternative careers, expected earnings at different stages of a career, sources of occupational information, and rankings of certain occupations and doctorate fields in relation to a number of characteristics. In general, the students answered in a way that supported the basic assumptions of the model. Their perceptions of the level and development of earnings in different occupations, and earnings foregone in college, for example, were quite realistic.

It is of particular interest in relation to what was said earlier (see page 54) about marginal groups in the choice situation that Freeman identified a group of "marginal suppliers".

"students expressing great likelihood of changing career plans upon receipt of new information". (op.cit., p. 223)

Other signs of marginality in this group were a late choice of career, great dissatisfaction with the adequacy of information and a likelihood of majoring in a field unrelated to their anticipated vocation. For this marginal group economic factors played a particularly large role in career decisions and interest in work was relatively less important for their choice. In spite of their strong interest in income, they had lower expectations than their more decided fellow students.

The definition of marginality suggested earlier in this report was based on personal characteristics such as sex, age, IQ, social

background. The definition used by Freeman takes another point of departure and the group turns out to be rather like the low confidence group described on pages 28-29. This confidence classification was strongly correlated with family background, and most characteristics of Freeman's marginal group, for instance the lower income expectations, are also compatible with the lower level of family background. This may indicate that the two definitions touch upon the same "syndrome" from different sides. Both stress that there is a group of choosers of particular interest when studying changes in individual demand since they tend to be more easily influenced by changes in conditions outside education.

Some examples of empirical studies, where indicators of different factors in the cost-benefit model have been used to explain trends in the aggregated demand for higher education, may be useful. Williams (1974) related the weakening trend in British A-level frequency to the employment situation for graduates. From 1965 on there was a steady increase in the proportion of graduates who six months after graduation were still seeking permanent employment. The status of the jobs that graduates entered also declined somewhat during the period. In the early 70s the starting salaries of graduates decreased in relation to weekly wages for manual workers. Together these changes meant that the gain from higher education tended to decrease, and this was likely to have influenced young people in their decision to prepare themselves for university entrance.

For the U68 Commission, Rydh and Österberg (1971) studied the adjustment mechanisms on the industrial labour market for persons with upper-secondary and post-secondary education of a vocational type. They showed that the yearly increments in starting salaries decreased in the late 60s for almost all of the occupational categories studied (engineers and economists of different educational levels). This change preceded a decrease in the number of applications to the upper levels of education.

Handa and Skolnik (1975) tested a multiple regression model, containing more or less the factors mentioned on page 72, on enrolments in higher education in Ontario during the period 1950-65. The direct costs of education and the additional earnings upon graduation were shown to have strong effects on enrolments. The opportunity costs and unemployment rates were more ambiguous. Most combinations of variables explained well above 90 per cent of the variance in the time series of enrolments. The "predictiveness" (in retrospect) of the indicators varied with the time lag introduced between the antecedent variables and the enrolment.

c) Factors attenuating supply-demand relations

On page 72 some factors that complicate the relations between economic conditions and choice have been mentioned. Now a somewhat more systematic listing will be attempted.

Evaluation of economic rewards

The economic rewards of an occupation are only one of its characteristics and different persons give this aspect different weight. This limits the strength of the relationship between choice and economic conditions. But as Williams and Gordon (1976) point out:

> "The anticipated earnings at 26 show an interesting pattern and conform fairly closely to the predictions of the hypothesis that those expecting to stay on at school and those intending to proceed to higher education anticipate financial rewards from so doing (even if these are not the explicit reasons for continuing)." (op.cit., p. 5, underlining here)

Education-occupation correspondence

Except for a limited number of occupations, e.g. medicine, with licensing restricted to those who have gone through a certain education, the correspondence between occupations and educational paths is far from perfect. In some fields, such as engineering, people with different levels of training can be substituted for one another. In other fields, e.g. public administration, substitution also takes place between different branches of education, such as law, social sciences, economics. This is a first complication for a person who hopes that his education will provide an entry ticket to a certain occupation.

Time lags

In the choice situation the student bases his estimates of earning differentials and employment possibilities upon the conditions prevailing during the period preceding his decision. He may also try to predict the conditions that will prevail after he has finished his education, but even experts have notoriously failed to make valid predictions over longer periods of time. Furthermore, his own decision, aggregated with those of his peers, influences the supply of trained manpower, but with a delay depending on the length of his training. Thus, two time-lags must be considered (cf. Freeman, op.cit., pp. 16-17): the information-decision lag preceding his educational choice and the training lag during his education. Employers also react to new supply situations with information-decision lags.

Specificity of markets

The conjunctural variations in the economy and employment may have different effects on different educational levels or occupational categories. This makes forecasts for specific educations or occupations even more difficult than for the labour market in general. There are examples where an economic recession has been followed by an increase in enrolment in higher education. The reverse has also happened and closer analysis to distinguish between the characteristic of the two situations is needed.

Information distortion

The students' information about the preceding market situation may be distorted in various ways. First, it is a very complex situation that cannot possibly be grasped in detail by anyone. Secondly, the information reaches the individual through a number of different filters - mass media, guidance services, and professional organisations; family, peers, and acquaintances; own experience from vacation jobs, etc. Casual examples of success and failure to make a career in a certain field often get wide publicity and compete with more systematic information. Such examples may easily lead to overreactions to changes in supply-demand relationships.

This listing of complicating factors has been done with a view to establishing the difficulties a student meets when trying to behave rationally in economic terms in his choice situation. The listing needs to be complemented both through theoretical analysis and empirical findings on the size and direction of possible effects. In spite of the complications, however, antecedent economic variables may be strongly related to variations in aggregated demand in a population as shown earlier in this section. This fact is of considerable interest from the point of view of educational planning.

3. SOCIAL AND CULTURAL CONDITIONS

It would be a truism to state that social and cultural conditions influence individual demand for education. In fact many of the determinants already referred to, as well as individual demand itself, reflect or even partly constitute social and cultural conditions. It is still worthwhile, however, to discuss some additional characteristics of society that are likely to influence demand, even though it is not possible here to report empirical evidence for their importance.

It seems that such evidence must be based either on cross-cultural studies where characteristics of the societies or subcultures are related to individual demand for education, or on

trends over time in social and cultural characteristics that run parallel to changes in demand. Social and cultural determinants could be incorporated in trend studies of the type referred to on page 76 for economic indicators rather than simply being possible residual factors in such investigations. The present section will briefly sketch some social and cultural characteristics that might be of interest for empirical studies.

Many of the hypothetical determinants in this domain have the character of values, attitudes and beliefs in society. Their influence may be of both a general and a differential nature (cf. page 55). A high value attached to education in general is likely to result in an overall increase in demand. An attitude to the function of education as primarily an instrument for occupational preparation may make demand more dependent on economic and labour market conditions than an attitude which views education as a means for self-realisation and self-expression. Here the attitudes interact with other conditions in society and the resulting effects on demand are very complicated to predict.

A change in the emphasis on leisure time as opposed to work, which is a result of economic development, influences the perception of the function of education and with that individual demand. The same is likely to be true for other trends in modern society such as:

- the increased participation in the decision-making at work and in society;
- the extended communication via mass media with the more remote part of society;
- the internationalisation of information, trade, tourism, etc.

Egalitarian vs. elitist attitudes in society influence the development of the educational system and as a result the opportunities afforded to different groups in society.

The present emphasis on recurrent education is related not only to changing conditions on the labour market but also to changing beliefs about the nature of different stages in the life-cycle and the developmental potentialities of adults. Similar factors are, mutatis mutandis, effective also at the pre-school end of the life continuum.

The "swing" from science and technology observed in many countries may to some extent be a symptom of a more general change in attitudes towards the industrialised society. In extreme cases this change in attitudes may even lead to open revolt among youth against the norms of society and refusal to start work in the present economic system.

These are just a few examples of values, attitudes and beliefs that seem to influence individual demand directly or via the creation

of structures and resources in the society. The examples are quoted mainly in order to indicate their place in a general model and to show that the topic is worth a more comprehensive and systematic treatment.

Institutional determinants: Discussion

Educational choices or individual demand have only rarely been a primary dependent variable in studies of institutional and structural determinants. Knowledge in this area is therefore incomplete and scattered. Many examples, however, indicate that such research would be profitable, and this for two reasons. The area is relatively unexplored and compared with many other approaches promises a high rate of return from a theoretical point of view. Some of the variables are more amenable to systematic change than most individual determinants. This holds for differentiation, guidance, admission, localisation and incentive systems, which are potential policy variables. Demographic, economic and cultural trends cannot be controlled in the same way but they may have a strong and immediate impact on demand which makes them useful as bases for planning forecasts.

The lack of empirical evidence for the impact of many institutional changes is not specific to individual demand for education. Rather it is just one aspect of a larger deficiency in knowledge: the lack of a systematic evaluation of social reforms. To some extent, this deficiency may depend on methodological problems in isolating the effects of one change from the multitude of other changes brought about or simply happening at the same time. It seems nevertheless that the interest in evaluation has been too slight and the methodological resignation too great. At this stage more intensive use of statistical routine information would help considerably.

Chapter IX

RECENT TRENDS AND CHANGES IN INDIVIDUAL DEMAND: THE CASE OF SWEDEN

In Chapter I a brief overview of trends in the enrolment to post-compulsory education in a number of OECD countries was presented. There follows a more detailed description and analysis of one country, Sweden.

The demand situation in a given country can hardly be described and understood without reference to the structure of the educational system itself. The system presently in operation in Sweden has the following main components:

- A non-compulsory pre-school which will have resources to receive the whole six-year-old age group.
- A comprehensive compulsory school of nine years starting at the age of seven ("grundskola").
- An integrated upper-secondary school ("gymnasieskola") of two, three or four years.
- A system of post-secondary education with universities, professional schools and post-secondary schools for specialised vocational education - all of which from 1977 on will become parts of an integrated system for higher education ("högskola").
- Adult education at secondary level in municipal secondary schools for adults, folk high schools, labour market training courses, and study circles arranged by adult education associations.

In the following, the stages including choice situations will be described in more detail.

The compulsory school

The size of an age cohort is now about 110,000 pupils and with very few exceptions they attend public elementary and lower-secondary comprehensive schools run by the municipalities but with State support covering the main part of costs. The first six years are completely undifferentiated and no streaming takes place except for various arrangements for special education and remedial instruction.

Marking begins in grade 3. Grade-repeating is practically non-existent. A first foreign language, English, is introduced for all pupils in grade 4.

The first choice situation comes in grade 6 where the pupils have to choose between options for grade 7. They have to decide on one out of five elective subjects and a general or a special (more academic) course in English and mathematics which are both obligatory through grade 9. The choices in grades 7-9 influence their competence for admission to different branches in the upper-secondary school. The distribution of choices has been fairly stable since the present system of options was introduced in 1970, and choices for grade 7 in 1973 can be used to illustrate general trends (Table 11).

Table 11

PUPILS' CHOICE OF SUBJECTS AND COURSES IN GRADE 7 OF THE SWEDISH COMPREHENSIVE SCHOOL

	Boys	Girls
French	11	29
German	38	45
Economics	6	21
Art	1	4
Technology	44	0
Total (%)	100	100
Special course in English	61	78
Special course in mathematics	66	65

Source: Trender och prognoser 1974, Table 2.2.1, p. 238.

The choices differ considerably as between boys and girls in a way that is characteristic for traditional sex roles: technology vs. languages. The linguistic preferences of girls may also be seen in their more frequent choice of the academic course in English.

About 40 per cent of the boys and 50 per cent of the girls combine their choices of subjects and courses in grade 7 so that they are likely to become formally competent to compete for admission to all branches of the upper-secondary school. About 30 per cent of the boys and 20 per cent of the girls meet the requirements of "practical" branches only. The remaining are excluded from a few branches if they do not undertake some complementary studies. In the elective system that preceded the present one, i.e. before 1970, about 35 per cent of the boys and 45 per cent of the girls, at the end of grade 9, met the requirements of all branches in the upper-secondary school. These figures seem to indicate that the proportion of "academic" choices has increased in the new system. On the other hand, most changes from grade 7 to grade 9 tend to reflect a move

towards less academic choice, so the recruitment situation for university-preparatory branches is likely to have remained fairly stable.

The upper-secondary school

The integrated upper-secondary school introduced in 1971 has 22 different branches. Five of these have a three-year, mainly university-preparatory programme - one of which (the technical) can be continued for a fourth more specialised year leading to a competence in engineering at secondary level. The two-year branches belong to two main categories: four with a mixed vocational and general programme, and thirteen with vocational programmes closely related to different occupational fields. In addition to these, the upper-secondary schools also run special courses for vocational training.

Before entry to upper-secondary school the student has to apply for admission to a certain branch of study. In addition to his first choice he may give a number of alternative choices in ranked order of preference. On the basis of his school marks in the comprehensive school, and for some branches credits for occupational experience, his competence is checked and he is ranked together with all other applicants in the district for all his choices. He is admitted to the branch of his highest preference where he is able to compete for available places. If he is admitted to a branch which is low on his preference scale he may often prefer to wait for a year or so or he may never enter the upper-secondary school.

Many different indicators of individual demand can be derived from the information about these choices and some will be summarised here.

Table 12

FORMALLY QUALIFIED APPLICANTS (FIRST CHOICE) AND STUDENTS ENTERING THE UPPER-SECONDARY SCHOOL IN 1975. BRANCHES COMBINED INTO SECTORS

(In thousands)

Level/sector	Technical-scientific	Humanistic-social	Economic	Total
	(a) Applicant's (first choice)			
3-4 year	14.7	8.8	6.2	29.7
2-year theoretical	2.3	8.6	3.1	14.0
2-year practical	24.0	17.8	7.1	48.9
	41.00	35.2	16.4	92.6
	(b) Entering students			
3-4 year	14.5	7.6	6.0	28.1
2-year theoretical	2.9	9.0	3.5	15.4
2-year practical	17.7	10.9	6.8	35.4
	35.1	27.5	16.3	78.9

Source: Skolöverstyrelsen, P.1, 1975:25.

Except for the 2-year practical branches in the technical and social sectors there seems to be a rather good fit between demand for places and supply. This is somewhat illusory, however, since, even in the groups where the number of first-choice applicants and entering students are in balance, not a few of the places were filled with second-choice applicants - those who were not able to compete for their first choice but were better qualified for another branch than some of its first-choice applicants. In addition some branches may get so few applicants in a district that they cannot be organised. Furthermore, the aggregation in Table 12 of a number of branches into sectors tends to hide unfulfilled choices.

The discrepancy between application and entry for the two-year practical branches stems mainly from four branches that were over-chosen in relation to available places.

	No. of applicants (first choice)	No. of entering students
Agricultural	2.0	0.9
Electro-teletechnical	5.8	3.3
Motor-technical	4.4	2.6
Nursing	13.4	6.3

Even though some of these discrepancies are large, the balance in 1975 was much better than in 1973, for example, when the number admitted to nursing studies corresponded to only one out of five first-choice applicants. The strong competition for these studies resulted in a situation where entering students had, on the average, even higher marks from the comprehensive school than those entering the natural sciences - the highest among the university-preparatory lines.

The changes in demand for different branches while the present choice system has been in operation can be seen from the indices in Table 13.

Table 13

THE CHANGE IN NUMBER OF FORMALLY QUALIFIED APPLICANTS (FIRST CHOICE) TO DIFFERENT LEVELS AND SECTORS OF THE UPPER-SECONDARY SCHOOL

Index: 1971 = 100

Levels	1972	1973	1974	1975
3-4 year branches	86	90	86	86
2-year theoretical branches	86	70	64	57
2-year practical branches	123	136	140	138
Sectors				
Technical-scientific	99	101	98	99
Humanistic-social	100	102	97	88
Economic	106	107	118	122
Total	100	102	100	98

Source: Skolöverstyrelsen, p.1, 1973:6, 1974:18 and 1975:25.

The number of applicants for 2-year practical branches of study during the period and the corresponding numbers for 2-year theoretical branches decreased, both to a very remarkable degree. The change for 3-4 year branches was less but clearly in the negative direction. In absolute numbers, this meant an increase over the period of about 13,000 first choice applicants for 2-year practical branches and a decrease of 10,000 for 2-year theoretical and of 5,000 for 3-4 year branches.

On the whole the changes seem to have stayed within the same sector even though there was a strong relative increase in the economic sector which was the smallest in absolute numbers. This increased both at the university-preparatory and at the practical level, but followed the main negative trend at the intermediate level, which may indicate that a certain polarisation of choices is under way.

The total number of applications, which was fairly stable over the period, was equivalent to somewhat less than 90 per cent of the 16-year-olds of that particular year. Not all of them, however, came directly from the compulsory to the upper-secondary school. More than 20 per cent of the applicants were over 16, and this was most often the case for practical branches, some of which also require vocational experience. The number of entrants corresponds to between 70 and 75 per cent of a year group. In addition about 10 per cent start special courses of at least one year at upper-secondary level. Places are available for about 90 per cent of a year group but because of local variations in the distribution of applications and locally fixed resources a perfect fit cannot be expected.

The sex distribution among the applicants as well as among the students entering varied considerably as among the different branches of study. In 1973 eight technical branches had 95 per cent or more boys among the first-choice applicants. The two practical-social branches had 95 per cent or more girls.

In 1975 the number applying for 3-4 year branches corresponded to 28 per cent of the age group, for 2-year theoretical branches to 13 per cent and for 2-year practical branches to 46 per cent. The 28 per cent for university-preparatory branches may be compared with the 45 per cent choosing combination required for these branches in grade 7. Some of them change to "lower" levels in grades 8 and 9. Others prefer a 2-year branch, e.g. nursing studies, in spite of their preparation. This attrition between stages has not been studied in detail.

The 3-4 year branches are of particular interest since they open up the gates to higher education more or less automatically. The decrease in applications for the natural sciences has caused great concern over recruitment to higher education. This negative trend for natural sciences started in 1969: the equivalent of the

Table 14

FORMALLY QUALIFIED APPLICANTS (FIRST CHOICE)
TO 3-4 YEAR BRANCHES AND STUDENTS ENTERING IN 1975
AND INDICES FOR APPLICANTS 1972-1975

(1971 = 100)

	Thousands of		Index for applicants			
	Applicants	Entrants	1972	1973	1974	1975
Natural sciences	7.9	7.7	84	82	72	70
Technical	6.8	6.7	87	92	90	93
Humanistic	8.8	2.9	53	51	44	77
Social sciences		4.8	132	142	143	
Economic	6.2	6.0	104	120	127	134

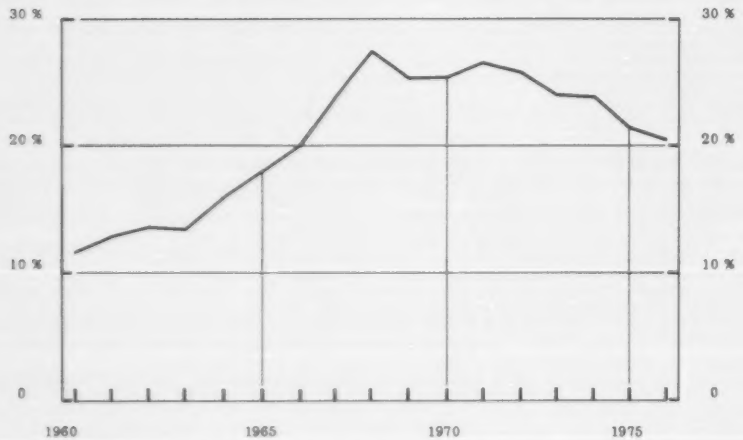
Sources: Skolöverstyrelsen, p.1, 1973:6, 1974:17, 1974:18 and 1975:25

branch before 1971 reached its maximum of first-choice applicants in 1968/69 with 13.7 thousands (12.5 per cent of 16-year olds).

The percentage graduating from the upper-secondary school with a 3-4 year university-preparatory programme has undergone considerable changes during the last fifteen years as can be seen in Diagram 6. After a peak in 1968 at 28 per cent of an age group, the level is now back at 21 per cent where it was around 1966-1967.

Diagram 6

PERCENTAGE OF AN AGE GROUP GRADUATING
FROM UNIVERSITY-PREPARATORY LINES



SOURCES Utbildningsstatistik 1960-1973, Tables 23, 25, 27, 32 and 1970-1974, Table 21, and Statistiska Meddelanden U 1976:1.

The 21 per cent graduating from 3-4 year branches can be compared with the 12 per cent completing 2-year theoretical branches and the 24 per cent in 2-year practical branches. Together they add up to 57 per cent of the age group which is much lower than the intake a few years earlier. More exactly the number graduating in per cent of the number of students entering is:

3-4 year branches	78%
2-year theoretical branches	79%
2-year practical branches	83%

For the 3-year natural sciences branch it was only 70 per cent.

As can be seen from a comprehensive follow-up study of the age group completing compulsory school in 1971 (Skolöverstyrelsen P 1 1975:23, 1975:27 and 1976:4) the overall figures hide a considerable number of transfers between branches, especially from the natural sciences to the social sciences. The strong competition for marks and difficulties in following the course were reported as the main reasons why this group transferred to another branch.

About 20 per cent dropped out from the studies they had begun; most of them during or after the first year. More than half of the drop-outs, however, returned to education within the four-year period of observation, usually after a year of work. For those having started in the 3-4 year branches this proportion was 80 per cent of the drop-outs against 36 per cent in the 2-year practical branches. Drop-outs were more frequent among female students although this was partly compensated for by a more frequent return to education.

One would expect transfers and drop-outs to be correlated with social background and so they were but, in the overall results, in a "reverse" direction. The percentage of students whose father had only compulsory schooling and of those whose fathers had university-level education were as follows:

	Father's education	
	Compulsory	University
Compulsory-school leavers not continuing in upper-secondary school	69%	2%
Students completing upper-secondary within observation period	57%	8%
Drop-outs from upper-secondary	51%	12%
Transfers between branches	42%	21%

When the drop-outs were differentiated as to those who returned or not, considerable differences in background were found.

	Father's education	
	Compulsory	University
Drop-outs not returning to education within observation period	66%	4%
Drop-outs returning to another branch in upper-secondary school	49%	15%
Drop-outs taking up another type of education (e.g. folk high school, municipal adult education)	37%	11%
Drop-outs returning to same branch in upper-secondary	25%	27%

The definite drop-outs had almost the same social background as those not going on to upper-secondary school. All the other three categories, however, as well as the transfers, came from higher socio-economic strata than those completing school in the branch where they started without a break. This somewhat curious difference must be due to two circumstances: most of the returning drop-outs started in a 3-4 year branch, and the 3-4 year branches tend to recruit from higher socio-economic strata than the 2-year ones. For a complete analysis of the influence of social background, however, branches must be kept apart and this was not done in the studies quoted here.

Higher education

From the point of view of individual demand it is relevant to divide the present system of higher education into the following components:

- university faculties with open admission (theology, law, humanities, social sciences, natural sciences);
- university faculties with restricted admission (medicine, dentistry) and professional schools at university level (e.g. technology, social work), also with restricted admission;
- post-secondary schools for specialised vocational education (e.g. nursing, pre-school and elementary teaching, creative art), also with restricted admission.

All university faculties and most of the professional schools have doctoral programmes for research training in addition to their basic programmes.

As already mentioned, all these schools from 1977 on will belong to an integrated system of higher education ("högskola"). The basic programmes will be divided into five vocational sectors:

- technology (engineers, physicists, chemists, etc.);
- administration, economics and social work;

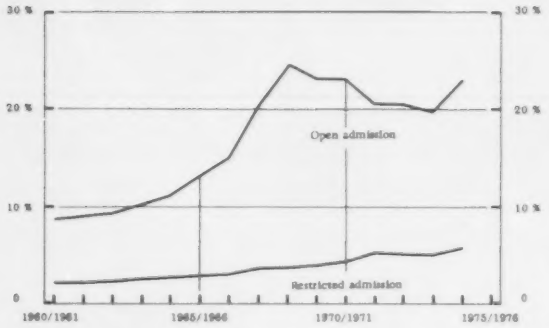
- medicine (physicians, dentists, nurses, etc.);
- teaching;
- culture and information.

For the doctoral programme the present division in faculties will remain.

The proportion of an age group entering universities and university-level professional schools has developed as shown in Diagram 7.

Diagram 7

UNIVERSITY-LEVEL ENTRANTS FIRST REGISTERED IN 1960/61-1974/75 IN PERCENT OF 20-YEAR OLDS



SOURCES Högskolestatistik I, Table 1 and Statistiska Meddelanden U 1975:41 and 1976:9, Table 8.

The admission of new students more than doubled in the 60s, reached a peak in 1968/69 at almost 25 per cent of an age group and decreased again to 20 per cent in 1973/74. After that the trend seems to turn upwards again and preliminary estimates for 1975/76 indicate a nearly complete recovery of the earlier maximum level. The negative trend from 1968/69 to 1973/74 was even stronger for the open admission faculties. Restricted entry increased continually during the whole period at a pace which was largely determined by the opening up of new educational resources.

In the open admission faculties the negative trend is concentrated in the three "philosophical" faculties which also differ among themselves as can be seen in Table 15.

The decrease is sharpest for the natural sciences followed by the humanities. Both the increase up to 1968/69 and the subsequent decrease are stronger for men in the natural sciences and for women in the humanities - that is for the sex that typically dominates the recruitment to the particular faculty. It looks as if the peak in 1968/69 was to some extent built up of marginal choices of university education conforming to sex roles; choices that were the first to disappear in a tougher climate.

Table 15

TRENDS IN STUDENTS ENTERING UNIVERSITY
(in proportion of 20-year olds)

Index 1968/69 = 100

Faculty	69/70	70/71	71/72	72/73	73/74	74/75
Humanities	93	81	67	71	69	75
Social sciences	98	107	84	80	77	91
Natural sciences	81	73	57	58	49	54

Sources: Högskolestatistik I, Table 1 and Statistiska Meddelanden U 1975:41 and 1976:9, Table B.

However, several institutional changes must also be taken into consideration:

- A new system with "lines" in the "philosophical" faculties was implemented in 1969/70. This reform was not popular among the students since it was expected to diminish their freedom of choice, and some who planned to start their studies in the fall of 1969 registered ahead of time in the spring of the same year in order to avoid the new system. This may have made the 1968/69 peak artificially high but would hardly involve more than one or two per cent of the age group.
- On an experimental basis, less strict requirements for admission were introduced for several subjects, especially in the social sciences.
- New types of vocationally oriented courses also started, most of them in the social science faculty.

These developments may have reduced or postponed the decrease for the social science faculty. Another change may have speeded up the decrease:

- In 1971, faculties and professional schools with restricted admission ceased to give extra credits at admission for grades received in the open faculties. This is likely to have affected natural sciences more than the other faculties.

Some of these institutional changes have contributed to a rather radical change in the composition of the student body of the three "philosophical" faculties. First, a still increasing proportion of the entrants have been 25 years of age or more at their first registration, which implies that they have a period of work between school and university.

	25 years old or more
1968/69	17%
1971/72	36%
1974/75	46%

The proportion is highest in social sciences and lowest in natural sciences.

The change in age composition results to some extent from a new admission rule allowing persons aged 25 or over who have 5 years of occupational experience to study some subjects even if they do not have full secondary preparation. In 1974/75 39 per cent of students over 25 were admitted according to this rule.

In the same year more than 50 per cent of the older students registered for part-time study and as many as 80 per cent of them reported that they did not intend to take a full degree. They would plan their studies for one semester or one course at a time. Many, however, are likely to end up with a complete degree.

The new admission rule and the changed age structure are also reflected in the social background of students. In Table 16 the trends among students registered for the first time are shown by age in combination with father's occupation.

Table 16

TRENDS IN NUMBER OF STUDENTS ENTERING UNIVERSITY BY AGE AND FATHER'S OCCUPATION

Index: 1968/69 = 100

	1969/70	1970/71	1971/72	1972/73
-24 years				
"Academic"	73	66	57	58
Manual worker	91	81	60	56
All new entrants	82	75	58	56
+25 years				
"Academic"	107	107	96	112
Manual worker	158	190	173	221
All new entrants	143	160	144	174

Source: Högskolestatistik II, Table 3.6, p.32.

The decrease in students entering occurred entirely in the younger age group coming more or less directly from upper-secondary school. The change was more rapid than average among students whose father had an occupation for which a university-level education is normally required. Among older entrants the increase was much stronger in the working-class group, and it is there that a "reserve" is likely to be found. The change meant a decrease in social bias but the probability of a person from working-class background entering university is still much below average. Even within higher education the differences are large. In medicine the ratio of students from academic backgrounds to those with a working-class one is three to one, in social work one to three.

For the faculties and schools with restricted admission the number of first-choice applications is a better indicator of individual demand than entrance. Two fields are chosen to illustrate the trends.

Table 17

FIRST CHOICE APPLICANTS AND ADMITTED STUDENTS
(ADMITTED STUDENTS AS A PERCENTAGE OF FIRST CHOICE APPLICANTS)

Index: 1968/69 = 100

	68/69	69/70	70/71	71/72	72/73	73/74	74/75
Medicine							
Applicants	100	123	112	90	97	103	94
Admitted	100	113	117	117	122	122	122
Admitted/appl.%	26	23	26	33	31	30	33
Technology							
Applicants	100	185	152	152	142	134	135
Admitted	100	139	163	170	165	154	154
Admitted/appl.%	75	57	80	84	87	86	86

Source: Trender och prognoser 1974, Table 2.2.18, Statistiska Meddelanden U 1974:56 and 1975:14.

The number of applications increased considerably between 1968/69 and 1969/70 but subsequently decreased or levelled out. The number of places available increased for both branches. The competition for places is much harder in medicine than in technology.

In 1969 the research training at universities and professional schools was re-organised and a four-year doctoral programme was introduced. Since then the number of new doctoral candidates admitted has increased, most rapidly in medicine (Table 18).

Table 18

ADMISSION TO DOCTORAL PROGRAMMES

Index: 1969 = 100

	1970	1971	1972	1973	1974
Humanities	140	162	161	184	160
Natural sciences	124	111	140	109	109
Medicine(1)	143	165	227	212	340
Technology	111	102	129	126	146
All fields(2)	130	131	157	124	155

1) Research training beyond the degree qualifying for medical practice.

2) Except social sciences because the statistics for some years include a two-year professional programme for psychologists.

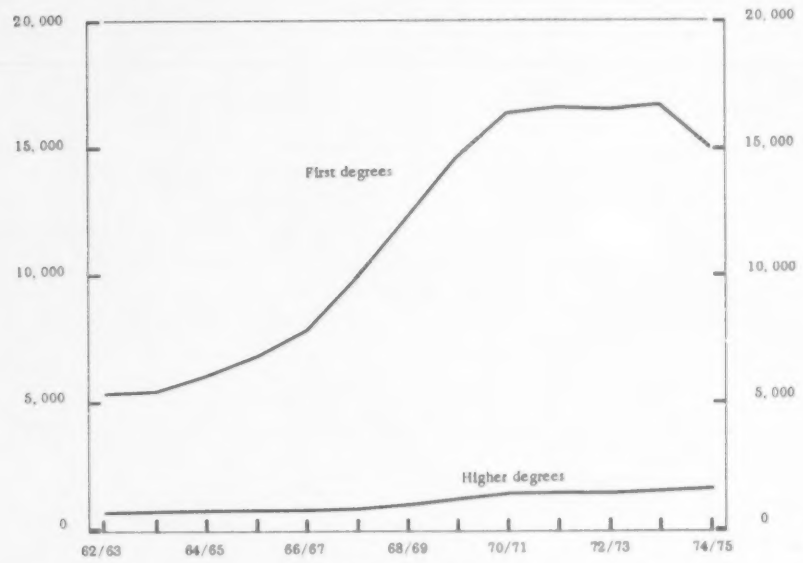
Source: Statistiska Meddelanden U 1976:11, Table B.

The total number of new admissions in 1974 (now including the doctoral programme in social sciences) was 2,750, which is roughly 10 per cent of those entering undergraduate programmes five years earlier or 2-2.5 per cent of an age group.

The graduation from university-level institutions is shown in Diagram 8.

Diagram 8

GRADUATION FROM UNIVERSITY-LEVEL INSTITUTIONS



SOURCES. Högskolestatistik I, Table 15. Utbildningsstatistik 1970-74, Table 89. Statistiska Meddelanden U 1975:41, 1976:9

For non-academic post-secondary education statistical data about applications and admissions are not so easily available as for the academic level where admissions are centrally administered and co-ordinated.(1) An idea of the size of the non-academic part of the post-secondary system may be obtained from the number of places available for beginners in 1973/74 (Table 19). The resources are divided among sectors according to the definitions of the 1968 Education Commission (U68) and comparisons are made with the restricted part of the academic system.

1) The Swedish Ministry of Education and Cultural Affairs is at present working at improving uniformity in statistical data on adult and non-academic post-secondary education, in order to facilitate its collection.

Table 19

PLACES IN 1973/74 FOR BEGINNERS IN NON-ACADEMIC AND ACADEMIC POST-SECONDARY EDUCATION WITH RESTRICTED ENTRY

(000's)

	Technology	Administration and Economy	Care	Teaching	Culture and information	Total
Non-academic	1.6	3.4	4.0	6.5	1.2	16.7
Academic	3.7	1.1	2.8	-	-	7.6

Source: Trender och prognoser 1974, Tables 2.2.23 and 2.5.3.

The number of non-academic places increased from 15,000 in 1968/69 to 16,700 in 1973/74. The only large increase was in the administrative and economic sector. In some fields the number of applicants seems to have increased relatively more rapidly than the number of places. As a comparison the number of first registered students entering open admission faculties decreased from 26,600 to 16,600 in the same period. Together these trends indicate a shift towards more vocationally oriented post-secondary education.

Adult education

Municipal adult education offers courses in various subjects corresponding to the curriculum of the upper secondary school and grades 7-9 of the compulsory school. It is possible to take either single courses or a full programme. The registration of new students has developed as follows:

(000's)

	1968	1969	1970	1971	1972	1973	1974
Entrants to subject courses	25	36	47	37	32	30	32

Source: Utbildningsstatistik 1970-1974, Table 95.

In 1974, 50 per cent of the entrants were 30 years old or more; 63 per cent women; 44 per cent had no education above compulsory. English was the most frequent subject (35 per cent of the courses taken).

Folk high schools, usually boarding schools, give full year courses corresponding to general education at secondary level and also more specialised courses of varying length in separate subjects. The number of students in full year courses has developed as follows:

(000's)

	1968	1969	1970	1971	1972	1973	1974
Students in full year courses	12	13	14	14	15	13	13

Source: Utbildningsstatistik 1970-1974, Table 95.

In 1974 about 60 per cent of the students were women. Median age was about 23 years, 20 per cent were 30 or over.

Labour market training is an instrument of labour market policy and is offered to unemployed persons. In addition, persons who plan to re-enter the labour market or who would like to change their occupation may under some circumstances receive such vocational training with financial support during the course. The average number of participants has developed as follows:

(000's)

	1968	1969	1970	1971	1972	1973	1974
Participants	30	32	34	39	43	46	41

Source: Utbildningsstatistik 1970-1974, Table 114.

About half of the participants are women.

Study circles are arranged by adult education associations, most of which are connected with people's organisations or trade unions. These associations receive financial support from the State and the municipalities which is roughly proportionate to the number of participants. On the average a circle meets for 25-30 hours with about 10 participants including the leader. The same person can take part in several circles during a year and the statistics refer to the number of participations and not to the number of persons.

(000's)

	1968	1969	1970	1971	1972	1973	1974
Participation	1,598	1,575	1,680	2,006	2,143	2,198	2,468

Source: Utbildningsstatistik 1960-1973, Table 122 and 1970-1974, Table 107.

Transfer from education to work

One year after the completion of compulsory school about 75 per cent of an age group were continuing their education, mostly in upper-secondary schools. About 20 per cent had started working and 2 per cent had tried but not succeeded in getting employment. Other activities were reported by 3 per cent. These proportions were fairly stable for the age groups finishing school from 1970-1973 and similar for boys and girls (Utbildningsstatistik 1970-1974, Table 116).

Such investigations one year after school have also been made for the upper-secondary school. The results for the 3-4 year branches are summarised in Table 20. Between 1970 and 1972 there was a considerable decrease in the numbers in education and an increase in the numbers in work.

Table 20

ACTIVITIES ONE YEAR AFTER COMPLETING 3-4 YEAR BRANCHES

Percentages

	Year of completion					
	Males			Females		
	1970	1971	1972	1970	1971	1972
Continued education	39	35	26	58	51	50
Work	24	29	30	36	43	43
Military service	33	32	30	-	-	-
Unemployment	2	2	10(1)	1	1	2
Other	2	2	3	5	4	5
Total	100	100	100	100	100	100

1) Spuriously high due to survey being made immediately after military service for part of the age group.

Source: Utbildningsstatistik 1970-1974, Table 118.

The relation between education and work differed as among branches (average for three years).

Education in % of Education + Work

	Males	Females
Natural science	70	71
Social science	60	62
Humanistic	58	60
Economic	40	24
Technical	24	18

The two vocationally oriented lines were quite naturally more often followed by work.

For 2-year theoretical branches the results are shown in Table 21.

Table 21

ACTIVITIES ONE YEAR AFTER COMPLETING 2-YEAR THEORETICAL BRANCHES

Percentages

	Year of completion			
	Males		Females	
	1970	1972	1970	1972
Continued education	22	15	32	25
Work	54	60	61	66
Military service	20	16	-	-
Unemployment	3	7(1)	3	3
Other	1	3	4	6
Total	100	100	100	100

1) Spuriously high due to survey being made immediately after military service for part of the age group.

Source: Utbildningsstatistik 1970-1974, Table 117.

For these branches also the relationships changed between 1970 and 1972 towards more work and less education.

The education proportion differed as among branches (average for two years).

	Education in % of Education + Work	
	Males	Females
Social	37	37
Economic	22	11
Technical	16	-

The rank order was similar to that for the 3-4 year branches but work was much more frequent in the 2-year thecretical branches. No corresponding data are available for 2-year practical branches.

In higher education graduates are regularly followed up half a year after receiving their first degree and results are reported for every period of three months. In Table 22 yearly averages are reported.

Table 22

ACTIVITIES HALF A YEAR AFTER COMPLETING FIRST DEGREE IN UNIVERSITY-LEVEL EDUCATION

Percentages

	Year of completion						
	1968	1969	1970	1971	1972	1973	1974
Continued education	31	30	30	23	23	20	16
Work	60	63	60	63	64	70	74
Unemployment	3	2	4	6	6	4	4
Other	6	5	6	8	7	6	6
Total	100	100	100	100	100	100	100

Source: Utbildningsstatistik 1970-1974, Table 120, and Statistiska Meddelanden 1975:16, 33, 46 and 1976:18.

The proportion in education decreased continually over the period. Unemployment was more frequent for those graduating in 1971 and 1972 than in other years.

With the last-mentioned exception the unemployment figures reported in relation to the whole group of graduates from different levels do not look very high. If, however, they are expressed as a relation between unemployed and the active labour force (work + unemployment) the picture becomes more serious (Table 23).

For university graduates six months after completion, the corresponding percentages can be estimated as:

	Year of completion						
	1968	1969	1970	1971	1972	1973	1974
Unemployment rate	4	4	6	9	8	6	5

Sources: As for Table 22.

Table 23

UNEMPLOYMENT RATE ONE YEAR AFTER COMPLETION
OF COMPULSORY SCHOOL AND UPPER-SECONDARY SCHOOL

(In per cent of active labour force)

	Year of completion					
	Males			Females		
	1970	1971	1972	1970	1971	1972
Compulsory	5	7	8	4	9	11
2-year theoretical	5		10(1)	5		5
3-4 year branches	7	6	24(1)	4	3	4

1) Spuriously high due to survey being made immediately after military service for part of the age group.

Source: Trender och prognoser 1974, Table 3.8.1, p. 358.

The unemployment rate of graduates from different levels can be compared with similar estimates for the total labour force in corresponding age groups. When comparing years between Table 23 and the last few tables it should be observed that the estimates there refer to one or a half year after the year of completion indicated in the tables.

Table 24

OVERALL UNEMPLOYMENT RATE IN SOME YOUNGER AGE GROUPS

(In per cent of active labour force)

	Observation year					
Age	1968	1969	1970	1971	1972	1973
18-19 years	-	-	-	7.2	7.1	6.1
20-24 years	3.0	2.8	2.2	3.7	4.5	4.4
25-29 years	-	-	-	2.6	3.0	2.4

Source: Trender och prognoser 1974, Table 3.6.2, p. 343, and 3.8.3, p. 358.

The trend over the years is similar for graduates and for the labour force in general but unemployment rates seem to have been somewhat higher for university graduates than the average in corresponding age groups.

Six months after graduation is a fairly short observation period in which to get established on the labour market and therefore measurements have also been done for the development during a three year period, with intermediate data for every half yearly interval. Table 25 reports average percentages for five "cohorts" who graduated in the second half of 1970 through the second half of 1972 and followed over three years.

Table 25

ACTIVITIES DURING THREE YEARS AFTER GRADUATION FROM UNIVERSITY-LEVEL INSTITUTIONS

Percentages

	Half year No.					
	1	2	3	4	5	6
1. Continued education	23	19	14	12	11	9
2. Work; qualified within own field of education	51	56	63	67	69	72
3. Work (except cat. 2 and 4)	14	14	13	12	11	10
4. Relief work	2	2	2	1	1	1
5. Unemployment	2	1	1	1	1	1
6. Other	8	8	7	7	8	7
Total	100	100	100	100	100	100
Unemployment rate						
a) relief work included	6	4	4	3	2	2
b) relief work excluded	3	2	2	1	1	1

Sources: Statistiska Meddelanden U 1975:11, 28, 37, 51 and 1976:25.

The figures reflect a continuous process of establishment on the labour market:

- a decrease in continued education (cat. 1) from 23 to 9 per cent;
- an increase in the categories of economically active (cat. 2-5) from 69 to 84 per cent;
- an increase of those reporting qualified work within a field for which their education was intended (cat. 2) from 51 to 72 per cent,
- a decrease in relief work and unemployment (cat. 4-5) from 4 to 2 per cent.

The percentages economically active at the end of three years were 88 for men and 76 for women.

Among themselves the five "cohorts" differed rather little except in two respects:

- continued education decreased from the first to the fifth "cohort";
- other work (cat. 3), i.e. work outside own field of education, or unqualified work within, increased from the first to the fifth "cohort".

These trends were stronger for the first year of observation after graduation than for the rest of the three-year period. This seems to indicate that the graduates successively became more willing to take any kind of work upon graduation rather than choosing to continue

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their education while waiting for a job they would think more appropriate to their degree qualifications.

Large differences in the establishment on the labour market existed between graduates in different fields. Table 26 shows the situation three years after graduation.

Table 26

LABOUR-MARKET SITUATION THREE YEARS AFTER FIRST DEGREE FOR SOME FIELDS

Percentages

	Active/total (Cat. 2-5/All)	Qualified work/Active (Cat. 2/Cat. 2-5)
Humanities: Teacher combination	76	78
Other	72	68
Behavioural sciences	74	76
Social sciences	89	84
Social work	88	97
Law	93	86
Business administration	94	93
Journalism	90	91
Natural sciences: Teacher combination	79	89
Other	72	83
Civil engineering	91	93

Sources: Statistiska Meddelanden U 1975:11, 28, 37, 51 and 1976:25.

In humanities, behavioural and natural sciences, many graduates continued their education for higher degrees and this led to a relatively low proportion of economically active persons. In humanities and behavioural sciences many graduates took jobs they did not regard as qualified work within their own field of education. Graduates with combinations preparing for secondary school teaching as well as graduates from professional schools were better off in both respects.

Summary and discussion

In the compulsory school the choice of elective subjects and courses has been fairly stable both within the present choice system and, where comparisons are possible, in relation to the last years before the change of system. The proportion choosing "academic" combinations is large enough for the present supply of "academic" alternatives at the upper-secondary level.

In the upper-secondary school the total enrolment has been stable over a number of years but a continual shift has taken place from general and theoretical to vocational and practical education.

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The first choice applications to the natural sciences decreased from 12.5 per cent of the age group in 1968 to 7.5 per cent in 1975. In practical studies places have been very scarce for the most popular first-hand choices. Graduation from university-preparatory branches reached a maximum in 1968 with 28 per cent of the age group and then decreased to 21 per cent in 1976.

Typical sex roles in choices still prevail in both lower and upper secondary education. In spite of higher marks in the compulsory-school girls tend to choose shorter and less ambitious educations at upper-secondary level. Transition to upper-secondary school and choice of 3-4 year branches are more frequent among compulsory-school leavers from higher social strata. Definitive drop-outs from education at upper-secondary level more often occur among students from lower social strata.

In university level education the entry of new students increased rapidly during the 60s, reached a peak in 1968/69 with 25 per cent of the group of 20-year-olds, then decreased to 20 per cent in 1973/74 and finally increased again, almost reaching during this last year the previous maximum level. The negative trend was to be found in the faculties with open admission and it was strongest in the natural science faculty. In professional schools and faculties with restricted admission the number of entrants increased continually but slowly. The number of applicants declined somewhat but began to do so later than in the open faculties.

The negative trend from 1968/69 on was much stronger than average for the groups that have traditionally been recruited by the faculties with open admission - students transferring more or less directly from university-preparatory lines to university. New recruits were found among persons without full secondary preparation who according to a new admission rule entered university after a period of vocational experience. The entry of this group also meant some equalisation in respect of social background.

In non-academic post-secondary education the number of places increased somewhat over the period of study. Among the different types of adult education the enrolment in folk high schools remained stable. The numbers in municipal adult education increased until 1970 and then dropped. Numbers in labour market training and study circles increased by 50 per cent or more from 1968 to 1973 and 1974 respectively.

It seems that the most important changes in individual demand for education from 1968 onwards were:

- a shift from general and theoretical to vocational and practical studies at the upper-secondary level;
- a decrease in the graduation from university-preparatory branches;

- a decrease in the number of entrants to university faculties with open admission;
- an altered composition of the student body of these faculties with more older students with vocational experience, often without full secondary preparation and without plans for a full degree, sharing their time between work and part-time study;
- a decrease in numbers choosing natural sciences at both upper-secondary and university level.

The data on which this description has been based are assembled from many different sources, all of them statistics aggregated for populations or sub-populations. A cross-sectional distribution of students entering the upper-secondary school, however, is difficult to compare with a cross-sectional distribution of students entering post-secondary education three or four years later since the time lag between entry to consecutive levels of the system varies considerably and more so in the later than in the earlier years. Longitudinal data describing the educational careers of cohorts of individuals are needed for a close analysis but such are scarce and often not co-ordinated over time with important institutional changes. In spite of this, the data referred to lend themselves to some interpretations.

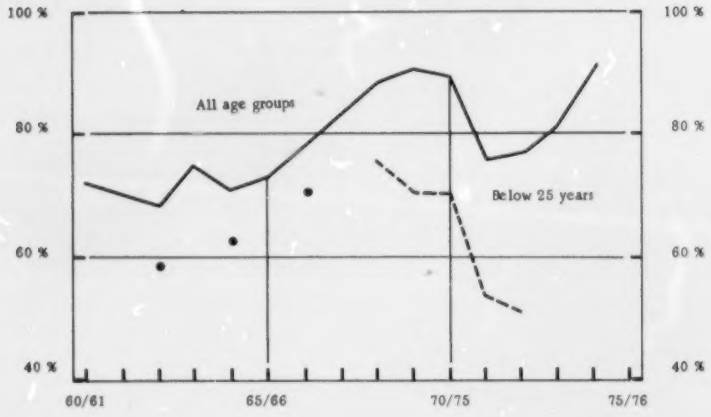
The curve illustrating the changes in entry to the universities, in Diagram 7, has a striking similarity to the curve for graduation from university-preparatory branches (Diagram 6). This is especially valid for the upward trend from 1960 to 1968. After reaching a maximum the upper-secondary curve drops more slowly than the university curve and the latter ends with an upward change.

During the upward phase the curve for university entrants was on the average four per cent units below the curve for upper-secondary graduation, with small variations. A rather constant gap between the two strongly developing curves, however, means large differences in the proportion entering university in relation to the graduates from university-preparatory branches the term before. (Because of the time lag for university entry this proportion is not a correct measure of the transition probability for the different years of graduation but can be used as a provisional indicator.) As shown in Diagram 9 this proportion was around 70 per cent until 1965, then increased strongly to about 90 per cent in 1968-1970, dropped in 1971 and then quickly recovered.

Earlier in the chapter it was shown that the proportion of older students (25 years or over) has been increasing strongly since 1968, partly due to the new admission rule. When the proportion of students entering in relation to upper-secondary graduates is calculated for students younger than 25 years only, the "transition"

Diagram 9

TRANSITION TO UNIVERSITY IN RELATION
TO UPPER-SECONDARY GRADUATION



curve changes its appearance as shown by the dotted line in Diagram 9. (Unfortunately information is not available for all the years.) Before 1968 the gap between the overall transition curve and that for young students was fairly constant and below 10 units. Then the gap began to increase and reached 25 units in the last year of observation. From preliminary data it seems that the gap has decreased a little in the last year.

These exercises indicate that through 1968 a fairly constant proportion of the age group (around four per cent) graduated from university-preparatory lines but preferred to start working or to enter non-academic post-secondary education. The increasing graduation from upper secondary was absorbed by open-admission university faculties and this was reflected in a growing transition rate both in overall figures and for young students. After 1968, both upper-secondary graduation and university entrance among young students dropped, in relation to the age group as well as in transition rates, but the drop in transition rates was, in most years, more than compensated for by older students. The upward change in university admission in 1974/75, which has no parallel in upper-secondary graduation, is likely to be a combined effect of entry according to the new admission rule for adults and delayed entry of "regular" students having postponed their university education. If so the present

upward trend will level off fairly soon, but it is difficult to predict at what level this will happen in a situation where the hierarchical dependency of higher upon upper-secondary education will, as a result of the U68 reform, become even weaker than at present.

The curve for upper-secondary graduation reached a maximum in 1968 but continued to be above 25 per cent for four more years. The peak had no counterpart in the entry figures three or four years earlier. Rather it seems to have been caused by an institutional change in 1968 which was the last year for obtaining the leaving certificate from the old Swedish gymnasium, the "studentexamen". A comparison between entry and graduation frequencies indicates that many with interrupted or delayed studies must have taken this last chance to get the traditional leaving certificate. The "real" decrease in graduation from university-preparatory lines thus occurs only in the last few years and after the introduction of the integrated upper-secondary school where vocational studies for the first time compete on a more equal basis with theoretical ones. Earlier it was shown that another institutional change - the line system in the "philosophical" faculties - was partly responsible for the 1968 peak in university admission.

This does not mean that all changes can be explained by the institutional reforms and their more or less intended consequences. It still has to be explained why after 1968 so many students preferred to start working directly after secondary school, and why a few years later their younger fellows tended to choose the vocational paths through the upper-secondary school. In public discussion both changes have been interpreted as reactions among young people who hope to gain entry to the labour market against types of education that they perceived as less marketable. In this situation, the younger students preferred a shorter and more specific vocational education. Those who had already received a general education at secondary level tried to get vocational experience instead of, or before, continuing in higher education. Many of the guidance recommendations seem to have supported such decisions.

Were there objective grounds for these reactions? Did those who had only general education meet with difficulties on the labour market, and at the time when the demand for "academic" alternatives began to drop?

Most of the statistical series referred to, on the transfer from education to work, were started in 1968 or later and information from the upward phase is therefore lacking. However, the number of first degrees from university level institutions doubled from 1964/65 to 1968/69 and could be predicted to increase at the same rate for two or three more years. This required a very fast adjustment of

the labour market in order to absorb this large number of educated persons. On the other hand, unemployment after graduation was still rather low at the end of the 60s. It began to rise in the early 70s reaching a maximum in 1972 and 1973 both among new graduates and among others in the corresponding age groups. This was after the decrease in entry had started and during a general economic recession. It almost seems that the students reacted ahead of the labour market changes.

The growing tendency among students to start working directly upon graduation is evident for both secondary and higher levels (cf. Tables 19-21). The three-year follow-ups show something about the work they find. A large part of those graduating from the "philosophical" faculties hold jobs even three years afterwards that they do not consider correspond to their qualifications within their own field of education. For instance, secondary school teaching has been able to absorb a smaller proportion of them than traditionally. This situation is in sharp contrast to that of the graduates from professional schools and vocational education and may have had a stronger impact on decisions than the risk of real unemployment. Salaries are also likely to have developed less favourably for these groups than they have on the labour market in general (cf. page 76).

The fact that so many people made use of the new admission rule may be seen against the background of the labour market situation. The large supply of persons with higher education meant increased competition for jobs and promotions. Employees with an intermediate level of education had much to gain from strengthening their competence.

Many attempts have been made to improve the vocational preparation of graduates from the "philosophical" faculties. The line system of 1969 (cf. page 90) was one reform and a rather unsuccessful one inasmuch as a majority of the students have kept using the loopholes in the system and continued to compose their own "lines" which are not necessarily related to occupations. The U68 line system to start in 1977 tries to channel the majority of students to vocational fields but still the relationship will be weak especially for students in humanities who are not absorbed by the teaching profession.

Another approach was the vocationally oriented courses, also mentioned on page 90, which can be taken separately or be combined with ordinary subjects up to a first degree. Recruitment to these courses has been successful but since most of them cover only one semester's work they cannot give much more than an introduction to a vocational field. Most of them deal with the application of economics, social and behavioural sciences.

A new commission for the upper-secondary stage has just been appointed. In its terms of reference the commission is asked to

give special attention to various possibilities of integrating general and vocational education in order to prepare the students both for entering the labour market directly and for continued education. The organisation should also facilitate recurrent education at the upper-secondary level.

In Chapter I, one more tendency was mentioned; namely the decline in the numbers choosing natural sciences both at upper-secondary and the higher level. Here the higher level is more dependent on the lower than, for example, in social sciences, since prerequisites are specified in mathematics, physics, chemistry and biology and these are hard to attain outside the secondary school system (including municipal adult education). At university level the natural science faculties have to compete with medicine, dentistry, engineering and other professional educations which have similar requirements but better employment prospects. A decrease in the numbers in natural sciences at secondary level will therefore have its most serious effect on the natural science faculties.

Several explanations of this "swing from science" have been discussed and proposals have been made to improve recruitment and reduce drop-outs at both levels. An expert group on the National Board of Education (1975) mentioned, among others, the following circumstances that are likely to contribute to the present problems.

- The science curriculum, especially in the first year of upper secondary, is too theoretical in relation to the students' previous study of the subjects in the compulsory school.
- The achievement tests stress abstract and theoretical knowledge at the expense of practical laboratory skills which may be more in line with the expectations of the students when they choose the branch.
- As mentioned already on page 63 the relative marking system has functioned in an unfavourable way for students in the natural sciences.
- Students in natural sciences study more subjects and spend more time on homework than other 3-4 year students. The marking system means that only the best of them are rewarded for this extra work when competing for admission to professional schools.

Similar motives were also given by students leaving the natural sciences for other types of education. These problems deserve considerable attention in the revision of the upper-secondary curriculum which is now getting under way.

The problems in the natural science faculties do not, however, come only from the difficulty in recruiting competent graduates from upper-secondary level but also from difficulties in finding appropriate jobs for their own graduates. Previously, many of these went

into secondary-school teaching but this has become a very narrow path. In the planning of new science lines for the U68 system new needs in society have been explored, for instance in the protection of the physical environment where biologists and chemists should find their place.

Looking back on this analysis it seems that it is principally institutional determinants which have been used to explain the changes in individual demand for education. Some of these refer to the educational system itself and coincide with reforms of different kinds. Some changes were the unintended consequences of reforms: the piling up of secondary graduation in the last year of "student-examen" and of university entry in the last term before the line system. Other changes were intended: the improved status of vocational lines at the upper-secondary level and the increased participation of adults in university education. Several conditions within the educational system have been proposed to explain the "swing from science", but in the discussion changes in cultural norms and attitudes towards science and technology have also been mentioned.

Other institutional determinants that were used in the interpretation were labour market conditions. Here the analysis was less specific for two reasons: the lack of continuous statistical series over a long enough time span; and the lack of knowledge about how labour market information reaches the individual and influences his decision.

One complication for such ex post analyses as have been made here is that different institutional changes are introduced - or just happen - simultaneously and this makes it difficult to evaluate their relative influence. Yet explanations ex post are relatively easy compared with attempts to use the same determinants ex ante and to forecast their effects. It is, in particular, both theoretically and psychologically difficult to predict the unintended consequences of a reform and sometimes these may turn out to be more conspicuous than the intended ones.

In this chapter references to individual determinants have been rare. Changes in the effects of sex, intelligence, school achievement, interests, family background, etc., have not been used here to explain changes in demand. Rather these factors are to be found behind the stabilities and even rigidities in the choice situation. The choice mentioned at the compulsory level is one example. The sex role pattern of choices is another. Socio-economic factors continue to influence demand to a marked extent in spite of institutional changes to overcome such impact. As mentioned earlier, these factors might be used for identifying "marginal groups" that can be observed more closely when studying individual demand for planning purposes.

Chapter X

CONCLUSIONS AND RECOMMENDATIONS

From the Swedish examples it is evident that educational planning has at least two main functions to perform in relation to individual demand. One is to predict variations in individual demand and to adjust educational provisions accordingly (the adjustment function). The other is to devise changes in the educational system in order to guide individual demand in the required direction, or more specifically, to reduce unwanted stabilities in the students' choice patterns (the change function). Instruments and techniques are needed for both functions but, and partly as a basis for the planning aids, an improved understanding of individual demand is essential.

Planning for adjustment

The adjustment function is conceived in relation to an existing educational system with a given general structure through which streams of students flow. To a degree that depends on policy decisions or on the "rules" of the system the resources for education are channelled to various parts of the structure in relation to the choices of the students. This adjustment should preferably be done with as little delay as possible and this is difficult in a system whose complexity makes manoeuvring slow. Applications made long enough in advance and which are binding for the individual can seldom be used without considerably reducing the freedom of choice that is likely to be a desideratum of the system. Monitoring of the system has therefore to rely on more indirect information about future student demand.

Fundamental to all such monitoring is a detailed and rapid statistical feedback about applications, admissions and drop-outs in the existing system. Trends at a lower stage of the educational system can be used for estimating consequences at a higher stage. For instance, a decrease in the numbers choosing sciences at upper-secondary level influences the supply of qualified candidates for science faculties a few years later. A mere extrapolation of trends at a given stage, however, has proved to be risky. For instance, it

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could not predict the decrease or levelling-out in enrolment following the almost universal expansion in the 60s.

An observation that can be made when studying the statistical data on Swedish education is that a link might be missing between the production of detailed statistical data and the continuous planning operations. The available statistics are abundant and in most parts relevant but are reported separately for different subsystems (levels, types of schools, etc.) and for different phases of the educational process (admission, enrolment, graduation, transfer to work). In order to get a grasp of the overall development it is necessary to make a systematic selection out of the ample supply of statistical tables and to relate different series to one another. An important step in this direction has been taken by the Swedish National Bureau of Statistics with the summary publications "Högskolestatistik", "Utbildningsstatistik" and "Trender och prognoser". However, even more secondary analysis of the basic statistical data seems necessary in order to make full use of the information available.

As regards the kind of information that should be collected, it seems that the information from a system in operation should be made particularly sensitive to changes in ongoing trends. It would be desirable to build up a sort of advance warning system. Present knowledge about causal mechanisms may not be sufficient as a basis for choosing the indicators of such a system, but some suggestions can be made on the basis of this report.

First of all it seems that structural changes introduced in a sub-section of the system should be judged in advance not only for their expected "local" consequences in the system but also for their more "distant" effects on other parts of the system. Once they are implemented they should be watched closely and changes in demand should be evaluated in relation to these expected local and distant outcomes. Examples of structural changes in the educational system that may have both local and distant effects have been given in Chapter VII (e.g. differentiation system, admission requirements, study finance).

In view of the great importance that students attach to occupational motives for their educational choice - and the objective data in support of this - it is necessary to include labour market indicators among the factors upon which demand predictions are based. Chapter VIII summarised some results of retrospective studies of overall demand in relation to economic trends. The Swedish experience of a simultaneous decrease in "academic" enrolment at different levels reported in Chapter IX points to the importance of general economic and social trends. Two difficult steps remain to be taken: the step from overall enrolment to specific demand, and

the step from retrospection to prediction, which, among other things, includes the problem of the time lag between economic events and individual demand.

So far the indicators have been sought among the institutional determinants treated in Chapters VII and VIII. What about the individual determinants that stand for the great quantity of research on individual choices? It was stated in Chapter VI that many of these individual determinants change rather slowly and are therefore less useful as indicators of change in demand. Take, for instance, the relationship between family background and choice of level of education which has proved rather resistant to change. Yet the general increase of level of education in the population means an upward move of the parent generation and with that a successively higher reference level for the young to start from. Under stable causal conditions this is likely to result in a slow increase of demand. This "multiplier effect" of education, however, is not very helpful for short-term planning where the deviations from the trends are more critical than its long-term direction.

Even though the trends in many individual indicators are too slow to be of interest for monitoring the system the causal relations between individual indicators and demand could also be useful in short-term planning. As has already been mentioned, these relations can be used for identifying marginal groups of students who perceive their choice situation as particularly difficult and remain less confident about their choices. They are likely - and this is a hypothesis rather than a result - to be the groups where changes are first detected, and in that case it would be profitable to watch them more closely than the population in general. This idea of "marginal choosers" is an analogy to the concepts of "marginal suppliers" in economics and "marginal voters" in political science. Maybe the other disciplines' use of such concepts would prove to be useful paradigms for the study of educational choice.

Information from marginal groups as a part of an advance warning system is an idea that has to be worked out in detail and to be tested in real conditions. It seems that the information should comprise not only choices but also motives and perceptions of the choice situation similar to those reported in Chapter IV and for this a development of more systematic accounting schemes would be valuable.

Planning for change

The statistical feedback from the existing system remains a primary source of information in planning for change - both for detecting the need for change and for evaluating changes introduced. It is important that educational statistics regularly record trends in those aspects which correspond to priorities in the system, for

instance equality of opportunity. The inclusion of variables such as socio-economic status in regular data collection has sometimes met with ideological protests but the omission of this information would be a serious obstacle to any efforts to reduce inequalities.

Structural changes in the educational system can be used for bringing about changes in demand. Chapter VII has inventoried some of the possible operative variables both in educational organisation and in information and incentive programmes. Unfortunately there is very little information that can be generalised for new situations. To some extent this is due to a lack of systematic evaluation of structural changes that have already been implemented. To some extent also the complicated interaction between variables within and outside the educational system makes such generalisation very difficult. In spite of these difficulties, however, structural changes should be evaluated as systematically as possible for both "local" and "distant" consequences on individual demand.

The causal relationships between individual determinants and demand are essential:

- for identifying change needs,
- for choosing change mechanisms and
- for evaluating changes in demand.

Often it is a changed relationship which is desirable, e.g. to make choices less dependent on family background, rather than a change in overall demand. It will be remembered that earlier in the report (page 55) the important distinction between differential and general effects on demand was made.

This brief survey of information needs for the change function of planning has resulted in a list similar to that for the adjustment function but with a slightly different emphasis. The needs can easily be co-ordinated and this is not surprising since the two functions can be conceived as two phases of a developmental sequence - a sort of assimilation/accommodation process of the educational system in relation to individual demand.

Research needs

In the previous sections information needs for planning have been identified. Some needs can be filled with efficient statistical feedback from the educational system, others require a better understanding of the choice process and the aggregation of individual choices to demand.

It has already been concluded that more is known about the distant individual determinants of choice according to the model of Blau et al. (cf. Chapter III) than about immediate determinants and the nature of the compromise between preferences and expectancies.

This process results in a choice which occurs after different numbers of preliminary trials and at different levels in a value hierarchy. How this choice is made is largely unknown and cannot be inferred from the more basic individual characteristics that have dominated research so far. Neither does it seem possible to approach this problem with the same tools as have been used for measuring the influence of individual characteristics, mainly correlational techniques of different kinds. More important is the close observation of individual decision sequences and the construction of decision models that can be tested in individual cases.

In addition, more traditional approaches to the relation between antecedent variables and choice need to be developed further and especially in relation to the choice of sector or type of education since such choices are less well understood than those of level of education. Longitudinal studies are still too scarce and those that exist frequently have collected data from one and the same informant, the individual himself, which makes it difficult to measure the influence of relevant persons in his environment without contamination. A concentration in some studies on individuals who, according to their demographic and social background, are marginal in relation to different choice situations would perhaps be profitable since this brings "change factors" rather than "stability factors" into focus. Along with more objective variables the individual's motives and perception of the choice situation are worth studying, and for this purpose more sophisticated assessment techniques have to be developed.

Choice at the individual level has its counterpart in demand at the collective level. It might be hypothesised that change in demand is more directly related to change on the expectancy side than on the preference side of the compromise. Then it is important to know what feedback from society and from the educational system starts a change process and what factors influence its diffusion among the choosers. Through what channels does information about opportunities and requirements reach the individual and how can distortion be avoided.

Research until now has created much more knowledge about stable and fairly resistant factors behind educational choice than about factors that influence changes in individual demand and possibilities of predicting or affecting the size and direction of this change. From Chapters VII and VIII it is evident that institutional and structural determinants have not been studied with demand as a major dependent variable to an extent that corresponds to their potential importance. This holds both for characteristics of the educational system and for economic and cultural conditions outside education. Neither have these factors been taken into due consideration in investigations with individual determinants as antecedent variables.

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A similar lack can be observed in studies focusing on institutional variables where their interaction with individual variables, i.e. their differential effects, have been rather neglected. These are large and complex requirements but necessary in order to bring about an understanding that can be used for operational purposes.

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